RESCUE RAIDER

Universal Field Kit Instructions

Bally

MIDWAY MFG. CO.

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U.S.A.

Phone (312) 451-9200 Cable Address MIDCO Telex No. 72-1596

M051-00J18-A011

WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally/MIDWAY T.M.

Invites You To Use

OUR TOLL FREE NUMBER FOR SERVICE INFORMATION CONCERNING THIS GAME, OR ANY OTHER BALLY/MIDWAY™ GAME YOU NOW HAVE ON LOCATION.

CALL US FOR PROMPT, COURTEOUS ANSWERS TO YOUR PROBLEMS.

Video or Pinball - Continental U.S. 800-323-7182

Bally/MIDWAY T.M. 10601 West Belmont Avenue Franklin Park, Illinois, 60131 phone (312) 451-9200

Printed In U.S.A.

RESCUE RAIDER - UNIVERSAL FIELD KIT
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SAFETY

The following safety hints apply to all game operators and service personnel. Specific warnings and cautions will be found throughout this manual where they apply.

WARNINGS

AC POWER CONNECTION. Before connecting the game to the AC power source, verify that the proper voltage-selection plug is installed on the electronic chassis assembly.

PROPERLY GROUND THE GAME. Customers may receive an electrical shock if this game is not properly grounded! To avoid shocks, do not plug in the game until it has been inspected and properly grounded. Sente game should only be plugged into a grounded 3-wire outlet. Customers may receive an electrical shock if the control panel is not properly grounded! After servicing any parts on the panel, check that the grounding wires are secure. Only then should you lock up the game.

DISCONNECT POWER DURING REPAIRS. To avoid electrical shock, disconenct the game from the AC power source before removing or repairing any part of the game. When removing or repairing the monitor, extra precautions must be taken to avoid electrical shock because high voltages may exist within the display circuitry and cathode ray tube (CRT) even after power has been disconnected. Do not touch internal parts of the display with your hands or metal objects! Always discharge the second anode from the CRT before servicing this area of the game. To discharge the CRT: attach one end of a large, well-insulated, 20-kV jumper to ground. Momentarily touch the free end of the grounded jumper to the anode by sliding it under the anode cap. Wait two minutes and discharge the anode again.

USE THE PROPER FUSES. To avoid electrical shock, use replacement fuses which are specified in the parts list for this game. Replacement fuses must match those replaced in fuse type, voltage rating, and current rating. In addition, the fuse cover must be in place during game operation.

HANDLE FLUORESCENT TUBE AND CRT WITH CARE. If you drop a fluorescent tube or CRT and it breaks, it may implode! Shattered glass can fly eight feet or more from the implosion.

CAUTION

PROPERLY ATTACH ALL CONNECTORS. Make sure that the connectors on each printed-circuit board (PCB) are properly plugged in. If they do not slip on easily, do not force them. A reversed connector may damage your game and void the warranty.

WARNING

The parts contained in this field conversion kit must be installed without deviation from the instructions contained in this manual and kit. Failure to follow these instructions in every detail may result in the creation of illegal interference to radio and TV reception.

BALLY MIDWAY has verified that this field conversion kit, when installed in the game(s) specified in this manual, complies with the requirements in Part 15 of the FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.

BALLY MIDWAY will not be responsible for incomplete or improper conversions, or installation in a game for which this field conversion kit is not intended. If this field conversion kit is installed in a game that is not specified in this manual or in a previously converted game, the operator is required to take whatever steps are necessary to insure compliance with the requirements in Part 15, Subpart J, of the FCC Rules for a Class A computing device.

SPECIAL NOTES:

THE PARTS REMOVED, WHILE MAKING MODIFICATIONS EXPLAINED IN THIS MANUAL, WILL NOT BE REUSED IN FUTURE GAME CONVERSION KITS.

The word "discard", as used in this manual, makes reference to this fact. All parts removed may be considered usable for other purposes.

Please be advised that when converting a game, it is advisable that **all former trademark and copyright registrations** be removed in the conversion process.

RESCUE RAIDER GAME REVIEW

The following is a description of how Bally Midway's video game "Rescue Raider" operates. It is composed of two parts: a Game Play description and a Self-Test Mode description.

GAME PLAY

RESCUE RAIDER'S setting is a tropical island of forests, swamps and plains. It is "enemy-occupied" and several hostages are held in a variety of stockades and fortresses. The object of the game is to locate and rescue them as quickly and as "unscathed" as possible (using secret weapons and escape clues), to destroy all the enemies, and then get off the island. One or two players can play, and in the two player mode, the players alternate each time one of them is killed by the enemy. Whenever a player loses his last life, he is always given the option of adding a coin and continuing game play where he left off. The number of coins the player used to reach the end of the game is displayed in the high score table.

During game play, two joysticks are used: one (located on the left side of the control panel) to move a high-tech, anti-tank vehicle that represents the player; and the other (located on the right side of the control panel) to shoot various weapons. There are four levels of playing difficulty. In each level, a special weapon is provided for use against enemy tanks, land mines and armored cars. In addition; to correct aiming, the player must adapt to each weapon against increasingly complicated barriers and an ever-more-aggressive enemy. Sometimes highly sophisticated, the weaponry includes a grenade launcher and cruise missiles. Also, the player's vehicle can become airborne by using a jet-pack. These "special weapons" are used by the player by first finding and picking up the weapons. Then the main machine gun or the currently attached "special weapon" is selected by pressing the "special weapon" button. The screen is vertically divided into two parts, the largest depicting the play field. About one-quarter of the screen's right side resembles a computerized control panel with four different displays. One details the sector of the island presently occupied, with a flashing box to highlight player location and radar blips that pinpoint the positions of secret documents and hostages. The other three displays show the direction to: clues, fuel dumps, ammunition, etc.; the type of weapon currently in use; and a record of hostages rescued and those not yet freed. Scoring (based on enemies destroyed, hostages rescued, and secrets found) is shown at the top of the screen where a gauge also indicates fuel supply. Opportunities to refuel occur throughout the game. The player is awarded one bonus life for each hostage rescued.

The level of game difficulty increases with a northward movement on the island through 4 zones. The player continues to struggle to ward off the enemy, locate clues, fuel, and weapons, circumvent walls and water and rescue hostages, until finally reaching an escape ship in a strongly protected harbor. In order to progress to the next zone, the player must find, destroy and drive thru a "gate" which separates each zone. Upon reaching the escape ship, the player is awarded bonus points for the number of hostages and secret documents retrieved, and for the number of lives and amount of fuel remaining at the end of the game.

SELF-TEST MODE

A special "test mode" is built into the game that allows the operator to check the current game option settings, to view the player statistics that are gathered, and to reset the statistics and the high score table.

The self-test mode is entered by flipping the existing "test switch" (which should be located on or near the coin door) at anytime. The first screen is an input, output and options setting display. While this display is on the screen, ensure that the joystick switches and the "SPECIAL WEAPONS" button are operating correctly. Especially make sure that the 45° positions of both joysticks (where 2 switches are closed at the same time) are easily reached (bend the contact tabs on the joystick to adjust when the switch opens and closes).

While in this mode, the lighted "SPECIAL WEAPONS" control panel button will blink. Make sure the bulb is working.

The current game switch options are also displayed on this screen. Flip the dip switches at SW1 and SW2 to change the option (see "Option Switch Settings" on pages 6 and 7).

Press the START 1 button to go to the next screen. The next screen contains Game Time Statistics, which includes: total plays; total coins; average time per game; average time per coin; maximum game time; and a histogram of game times. (Note: the histogram shows GAME TIME statistics, **not** TIME PER COIN statistics). The important piece of information here is the average time per coin. If the average time per coin is too long, then make the game harder by reducing the number of lives given per coin or by reducing the minimum game time. If it's too short, increase the number of lives per coin or the minimum game time by re-setting the proper option switches.

Press START 1 to go to the next screen: Game Score Statistics. Here is presented the total number of games, the all-time high score, and a histogram of game scores (X 10,000).

To reset the statistics, press START 2, twice. This resets the statistics and the high score table.

Flip the test switch button at any time to go back to game play mode.

RESCUE RAIDER U.R.

OPTION SWITCH SETTINGS

SWITCH NO. 1 (SW1) - AT E1 - LOCATED ON SMUDGE CPU BOARD

////////////////////////////////// VARIOUS GAME PLAY OPTIONS //////////////////////////////////

DURING GAME PLAY:	SW#1	SW#2	SW#3	SW#4	SW#5 NOT USED	SW#6 NOT USED	SW#7	SW#8
* 4 LIVES ON EACH COIN	ON	ON						
5 LIVES ON EACH COIN	OFF	ON						
6 LIVES ON EACH COIN	ON	OFF						
3 LIVES ON EACH COIN	OFF	OFF						
* MINIMUM GAME TIME: 90 SECONDS			ON	ON				
MINIMUM GAME TIME: 60 SECONDS			OFF	ON				
MINIMUM GAME TIME: 45 SECONDS			ON	OFF				
MINIMUM GAME TIME:120 SECONDS			OFF	OFF				
* KEEP HIGH SCORES ON POWER UP							ON	
RESET HIGH SCORES ON POWER UP							OFF	
* MUSIC IN ATTRACT								ON
NO MUSIC IN ATTRACT								OFF

*** INDICATED FACTORY RECOMMENDED SETTINGS** — **PART NO. M051-00J18-A007**

RESCUE RAIDER U.R.

OPTION SWITCH SETTINGS

SWITCH NO. 2 (SW2) - AT E2 - LOCATED ON SMUDGE CPU BOARD

	VARIOUS CREDIT OPTIONS	SW#1	SW#2	SW#3	SW#4	SW#5	SW#6	SW#7	SW#8
	//////////// COINS PER CREDIT ////////////								
	FREE PLAY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
*	1 COIN / 1 CREDIT	ON	ON						
	1 COIN / 2 CREDITS	OFF	ON						
	2 COINS / 1 CREDIT	ON	OFF						
	3 COINS / 1 CREDIT	OFF	OFF						
	//////////// COINS ADD BONUS COINS ////////////								
*	NO BONUS COINS			ON	ON	ON			
	2 COINS ADDS 1 BONUS COIN			OFF	ON	ON			
	3 COINS ADDS 1 BONUS COIN			ON	OFF	ON			
	4 COINS ADDS 1 BONUS COIN			OFF	OFF	ON			
	4 COINS ADDS 2 BONUS COINS			ON	ON	OFF			
	5 COINS ADDS 1 BONUS COIN			OFF	ON	OFF			
	5 COINS ADDS 2 BONUS COINS			ON	OFF	OFF			
	5 COINS ADDS 3 BONUS COINS			OFF	OFF	OFF			
	//////////// COIN MECH MULTIPLIER ////////////								
*	LEFT COIN MECH X 1						ON		
	LEFT COIN MECH X 2						OFF		
*	RIGHT COIN MECH X 1							ON	ON
	RIGHT COIN MECH X 4							OFF	ON
	RIGHT COIN MECH X 5							ON	OFF
	RIGHT COIN MECH X 6							OFF	OFF

* INDICATED FACTORY RECOMMENDED SETTINGS

PART NO. M051-00J18-A007

RESCUE RAIDER UNIVERSAL FIELD KIT
CONVERSION PROCEDURE

The new RESCUE RAIDER Field Conversion Kit is designed to be installed in any upright model game cabinet with a horizontally mounted monitor. Please read these instructions thoroughly before you begin.

Tools Required:

Nut Driver Set	Hammer
Slotted Screw Driver (medium size)	Punch
Phillips Screw Driver (medium size)	Power Drill
Solder	Drill Bit Set
Soldering Iron	Wire Cutter

REMOVAL OF OLD GAME HARDWARE:

1. Turn the power off to your game cabinet and disconnect it from its' wall outlet.

2. After opening access door(s) of your game cabinet, remove all existing P.C. boards and their mounting hardware. Discard P.C. boards and mounting hardware except for wood screws that can be reused later. Also remove, and save for reuse, ground straps and their mounting hardware.

3. After disconnecting Line Cord from existing Power Chassis Assembly remove Power Chassis, ground straps, and mounting hardware. Discard Power Chassis and its' mounting hardware except for wood screws that can be reused later. Also discard ground straps but save their mounting hardware for reuse.

4. DO NOT REMOVE existing Speaker Cable:

   A. If your game cabinet's Speaker Cable is part of existing Master Cable (Wire Harness), do not disconnect these cable wires from existing Speaker. Separate out entire length of these cable wires from Master Cable and then cut wires off at their connections to P.C. board connector of Master Cable. Strip a little insulation from each wire for later splicing and soldering.
   B. If your game cabinet's Speaker wiring is a separate cable assembly, do not disconnect cable wires from existing Speaker. Cut wires off at connection to P.C. board connector. Strip a little insulation from each wire for later splicing and soldering.

5. Completely remove your existing Master Cable (Wire Harness) and discard.

6. Modify existing High Voltage Cable Assembly to be connected to new parts supplied in your kit. Cut off connectors (which did secure to your old Power Chassis) and strip off a little insulation from each wire for later splicing and soldering.

7. Remove existing Control Panel from your game cabinet. Remove all controls and wiring from Control Panel. Leave existing unused cable clamps in same positions for reuse. Discard ground strap but save it's mounting hardware for reuse.

8. Remove existing Viewing Glass and save. Remove and save existing Monitor Bezel for later sizing of new Monitor Bezel.

9. Remove existing Header Attract Art and save for later sizing of new Header Attract Art.

INSTALLATION OF NEW GAME HARDWARE:

NOTE: Follow the steps below, the illustrations given in Figures 1, 2 & 3 (on pages 10, 11 & 12), the assembly illustrations (on pages 16 & 18), the Wiring Diagrams (on page 19).

1. To Install New Parts In Existing Control Panel:

   A. Trim new Overlay (supplied in kit) so that it properly covers old Overlay on Control Panel. Slowly and carefully peel heavy waxed backing paper from new Overlay and place over old Overlay on Control Panel.
   B. We recommend that center marks shown on new Overlay be used in locating new controls. **CAUTION: DO NOT** use given center marks for new "ONE PLAYER START" Push-Button Switch and new "TWO PLAYER START" Push-Button Switch. The spacing between them must be wider. **DO NOT** use given center marks on new Overlay if they conflict with locations of old control holes.
   C. Cut out (or drill) necessary holes for mounting of new controls.
   D. Secure Control Panel to game cabinet.
   E. Install new controls to your newly modified Control Panel as shown in Figure 1 & 2. Mount controls using eight (8) carriage bolts, eight (8) hex head nuts and two (2) Pal nuts from your kit.
   F. Route new Control Panel Cable Assembly and solder its' bare wire ends to terminals of new controls as shown in Figure 2 and Wiring Diagram (page 1 of 2). Reuse existing cable clamps.

   IMPORTANT NOTES:
   - Activator in each Joystick Assembly is positioned for "8-Way" joystick steering movement. (see "Joystick Assy: Shaft & Plate "Illustration on page 18.)
   - Make sure that when joystick (of either assembly) is pulled in any diagonal (45°) direction, BOTH switches affected MUST BE CLOSED AT THE SAME TIME. "Reaching the diagonals" on both joysticks is CRITICAL TO PROPER GAME PLAY. Necessary switch adjustment requires bending switch contact leaves so that proper closure by joystick movement is achieved.

   E. Install new Game Play Instruction Card on Front of Control Panel where card will be plainly visable and will not block player's view of game.

2. Install new POWER CHASSIS ASSEMBLY, new POWER SUPPLY, AUDIO BOARD & MOUNTING PLATE ASSEMBLY, and new CARDRACK WITH CPU BOARD ASSEMBLY to inside of your cabinet in locations as suggested in Figure 3. Transformer on POWER CHASSIS ASSEMBLY should be to your left in your cabinet. We recommend that you use #8 wood screws of sufficient length to secure above new assemblies to your cabinet.

IMPORTANT NOTES:

- Locate "PIN 1" location label on each one of new Master Cable Assembly connectors you will secure to corresponding P.C. board connectors: P1 & P2 (on CPU BOARD) and J2 (on POWER SUPPLY P.C. BOARD). Do this to avoid making incorrect reversed connections.
- Make certain that a pair of black bare-ended wires (in Master Cable Assembly connected to pin 1 of connector P1 of CPU BOARD) BOTH are secured to your existing Coin Door LIGHT GROUND and SWITCH GROUND.

3. To install new Master Cable Assembly (refer to Figure 3 and both wiring diagrams):

   A. Route new Master Cable Assembly in your cabinet and secure its connectors to assemblies as shown in both wiring diagrams. Reuse existing cable clamps.

   B. Referring to both wiring diagrams, solder bare wire ends of Master Cable Assembly to existing Coin Door.

   NOTE: Solder resistor and diode (supplied in Hardware and Bag Assembly) to Coin Door as shown in Wiring Diagram (page 2 of 2).

   IMPORTANT NOTE:
   Please observe in both wiring diagrams, the only coin meter voltage provided is for "12 volt" type coin meters.

4. Splice and solder two (2) three foot long wires of new (partial) Speaker Cable Assembly to two bare wire ends of existing Speaker Cable Assembly as shown in Wiring Diagram (page 1 of 2).

5. Modification of existing High Voltage Cables: Monitor; Header Light; and On-Off Switch (see Wiring Diagram (page 1 of 2) and POWER CHASSIS ASSEMBLY Illustration):

   A. Monitor Cabling Modification:

   - Crimp pins (supplied in kit) onto three (3) bare wire ends of existing Monitor Cabling and plug each pin into 3 position connector housing (supplied in kit).

   - Plug connector P13 into Power Chassis connector J13.

   B. Header Light Cabling Modification:

   - Crimp pins (supplied in kit) onto three (3) bare wire ends of existing Header Light Cabling and plug each pin into 3 position connector housing (supplied in kit).

   - Plug connector P12 into Power Chassis connector J12.

   C. New Chassis Power Cable Assembly Installation:

   - Plug connector P11 into Power Chassis connector J11.

6. Secure existing line cord to line cord connector on new POWER CHASSIS ASSEMBLY.

   A. If they don't match up, cut off and discard existing connector and strip back a little insulation.
   B. Secure connector of new Adapter Cable Assembly to line cord connector of POWER CHASSIS ASSEMBLY.
   C. We recommend that you splice each line cord with each Adapter Cable Assembly wire using wire nuts.

   NOTE: If your game has an On-Off Switch in line with existing line cord, we recommend that you use modification shown in Wiring Diagram (page 1 of 2). Splice each prepared On-Off Switch wire with each Adapter Cable Assembly wire using wire nuts.

7. Installation of four (4) new Ground Straps which are supplied in your kit (refer to Figure 2, Figure 3, and POWER CHASSIS ASSEMBLY Illustration):

   A. Secure 48" Ground Strap, 36" Ground Strap, and 18" Ground Strap to POWER CHASSIS ASSEMBLY with hex nut as shown in its' illustration.
   B. Connect 18" Ground Strap to new CARDRACK WITH CPU BOARD ASSEMBLY.
   C. Connect 36" Ground Strap to existing monitor.
   D. Connect 48" Ground Strap, along with additional new 18" Ground Strap, to existing Coin Door's ground.
   E. Connect other end of 18" Ground Strap to modified Control Panel.

   NOTE: **DO NOT GROUND** THE NEW "POWER SUPPLY, AUDIO BOARD & MOUNTING PLATE ASSEMBLY.

8. To Install new Header Attract Art:

   A. Center old Header Attract Art on new **over-sized** Header Attract Art.
   B. Draw a line around outside edges of old Header Attract Art.
   C. Cut out properly sized new Header Attract Art (trim, if necessary, for accurate fit).
   D. Discard old Header Attract Art.
   E. Install new Header Attract Art in game cabinet.

9. To install new Monitor Bezel:

   A. Center old Monitor Bezel over new **over-sized** Monitor Bezel.
   B. Draw a line around outside edges of old Monitor Bezel.
   C. Cut out properly sized new Monitor Bezel (trim, if necessary, for accurate fit).
   D. Discard old Monitor Bezel.
   E. Place new Monitor Bezel over existing Monitor and set existing Viewing Glass in place.

10. Referring to "Decal Installation Instructions" on page 13, prepare your cabinet's sides and apply new Side Decals. Place them horizontally at sufficient height.

11. Close and latch Control Panel.

12. Close and lock Coin Door.

13. Check option switch settings (referring to pages 3 and 4).

14. Before powering up game cabinet, leave rear access door off. If your game has an interlock switch, pull it out to its' fully extended position.

15. Power up game and check Game Operation on Monitor screen and also check Controls.

16. Color Monitor Screen Adjustments (if necessary):

A. Center the picture,
B. Adjust vertical size (height),
C. Adjust horizontal size (width).

Make sure the words "SCORE" (located in upper left corner of screen) and "DIRECTION" (located in upper right corner of screen) do not get "cut off" of Monitor screen.

17. Close and lock rear access door (after returning interlock switch, if your game cabinet has one, to its normal position).

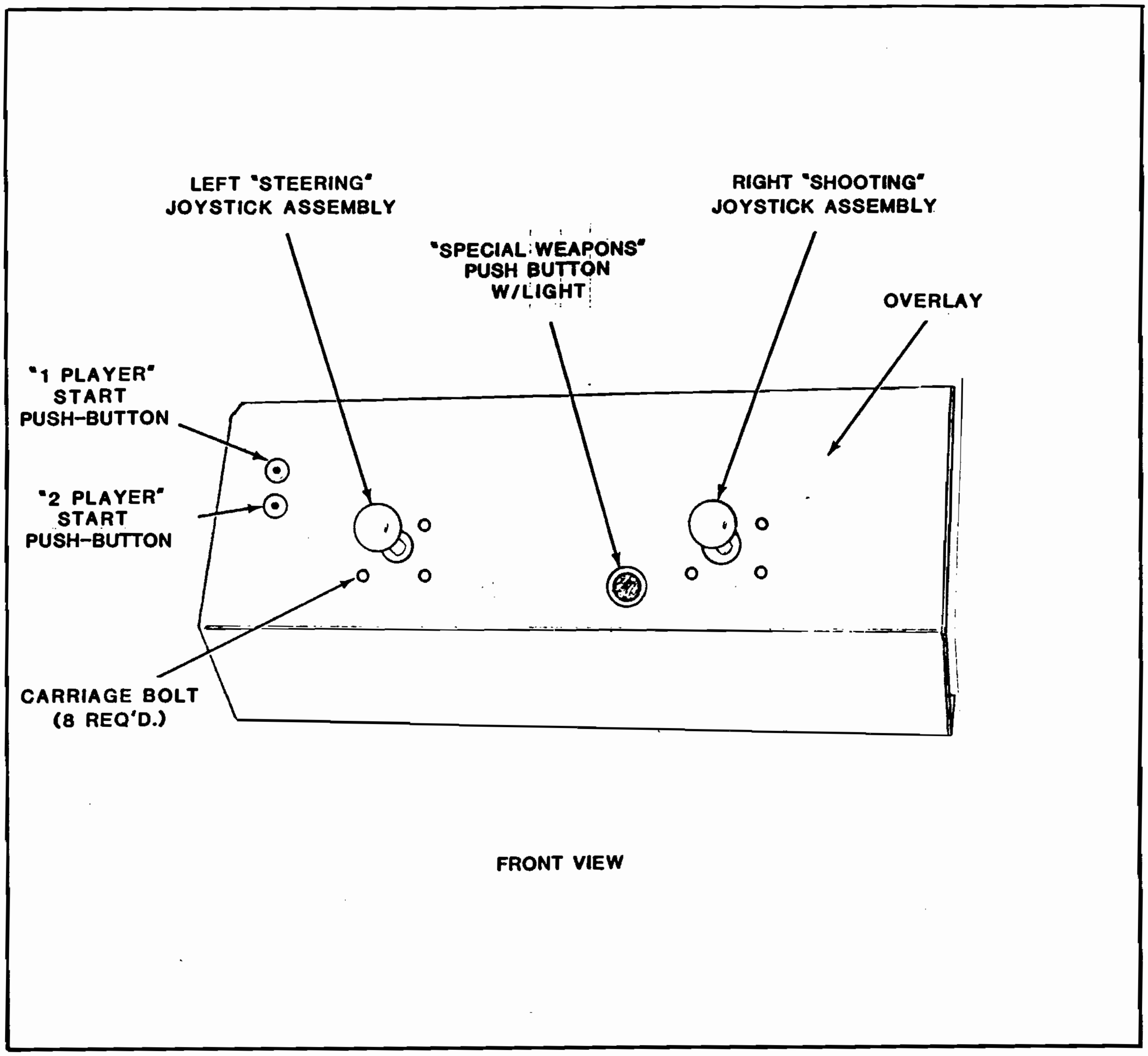


FIGURE 1. SUGGESTED MOUNTING OF NEW CONTROLS ON EXISTING CONTROL PANEL

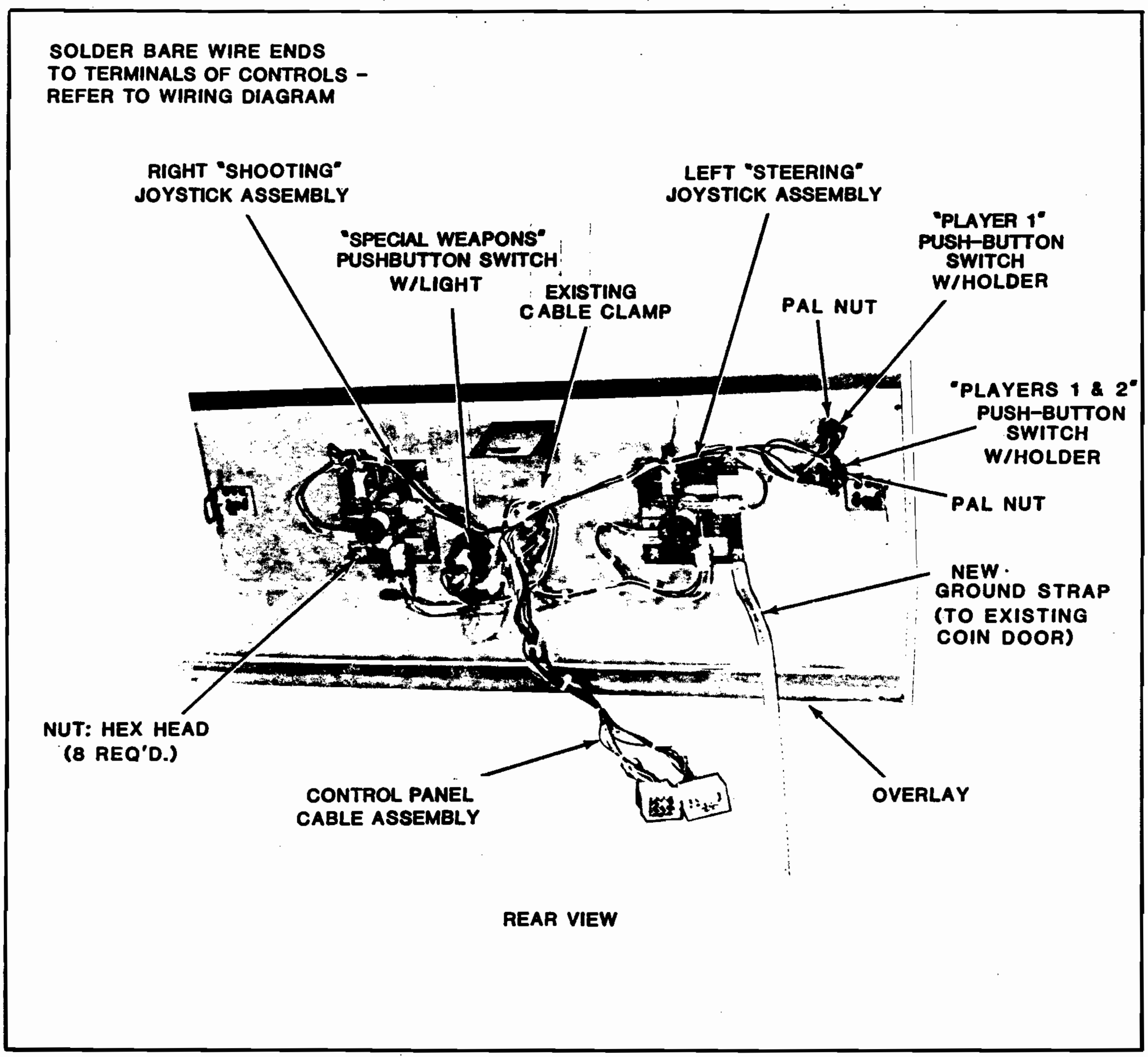
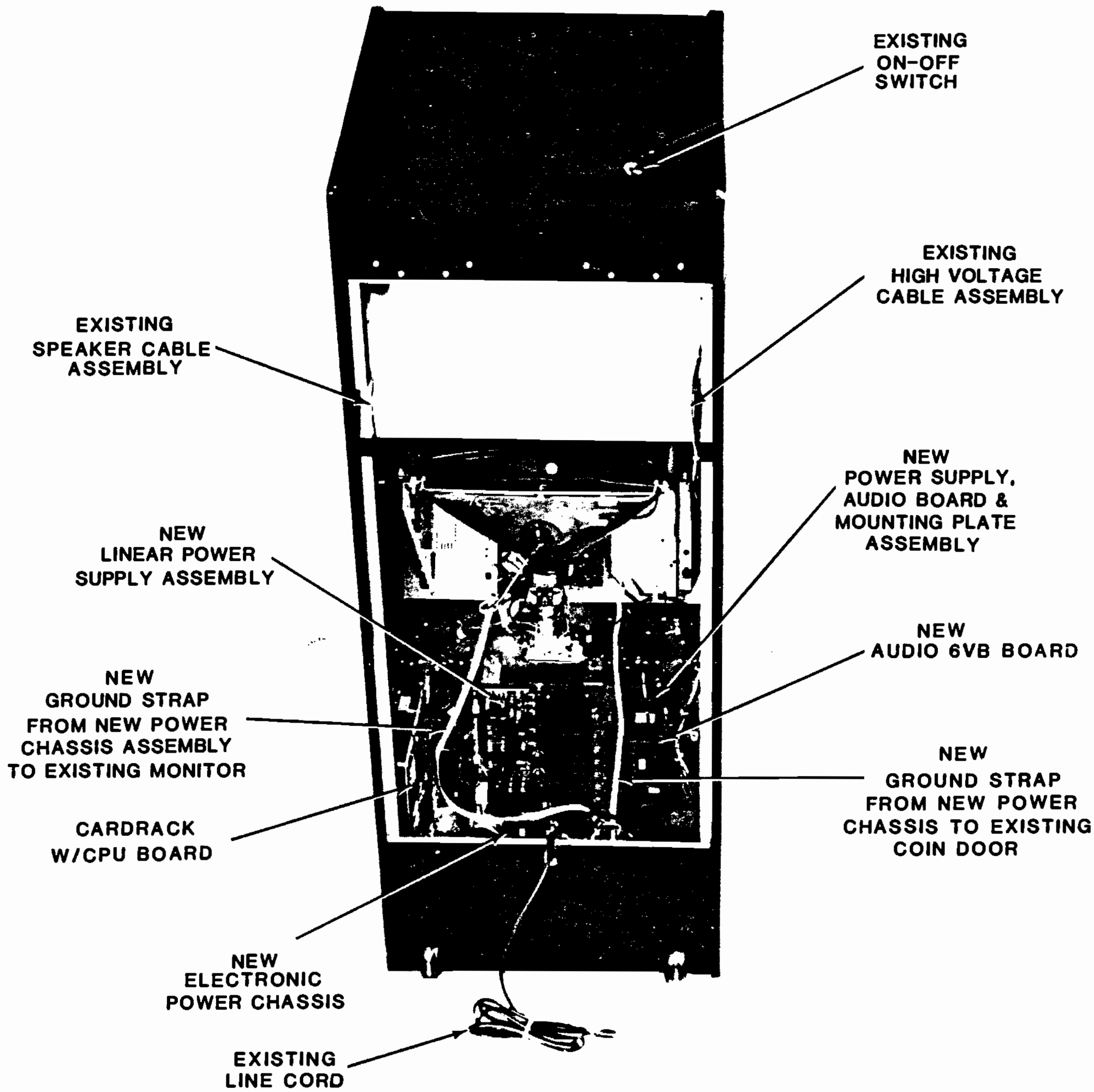


FIGURE 2. NEW CONTROL CABLE ASSEMBLY CONNECTED TO NEW CONTROLS ON EXISTING CONTROL PANEL



REAR VIEW

FIGURE 3. PLACEMENT OF NEW ELECTRONIC ASSEMBLIES IN GAME CABINET

DECAL INSTALLATION INSTRUCTIONS

I M P O R T A N T   N O T E:

READ THE FOLLOWING INSTRUCTIONS THROUGH COMPLETELY AT LEAST ONCE BEFORE ATTEMPTING TO INSTALL THE DECAL(S) THEY CONCERN!!

THE DECAL(S) ARE COMPOSED OF TWO (2) PARTS: 1) A HEAVY WAXED BACKING SHEET WHICH COVERS THE STICKY SIDE OF THE DECAL, AND 2) THE DECAL ITSELF.

****************** **TO INSTALL THE DECAL(S), PROCEED AS FOLLOWS:** ***************

1. BE SURE THE AREAS WHERE YOU ARE GOING TO APPLY THE DECAL IS CLEAN AND FREE OF ALL DIRT, GREASE, AND GRIME.
2. USING ANY **SPRAY-ON GLASS CLEANER,** THOROUGHLY WET DOWN THE AREA WHERE YOU INTEND TO PUT THE DECAL.
3. REMOVE THE **HEAVY WAXED BACKING SHEET** FROM THE DECAL BY POSITIONING IT FACE UP ON A FLAT SURFACE: GOING TO **ANY CORNER;** AND BENDING THIS CORNER UP SLIGHTLY TO SEPARATE THE DECAL FROM THE **HEAVY WAXED BACKING SHEET.**
4. **SLOWLY** AND **CAREFULLY** PEEL THE HEAVY WAXED BACKING SHEET AWAY FROM THE DECAL.
5. PLACE THE DECAL ON THE GAME CABINET **OVER** THE **WET** GLASS CLEANER YOU JUST APPLIED. (THIS WILL ALLOW A **SMALL** AMOUNT OF FINAL POSITIONING TO BE DONE AFTER THE DECAL IS APPLIED TO THE GAME CABINET.)
6. SMOOTH THE DECAL.

RESCUE RAIDER UNIVERSAL FIELD KIT - PARTS LIST
PART NO. GJ18-00001-0000

ORDER BY PART NUMBER **ONLY**

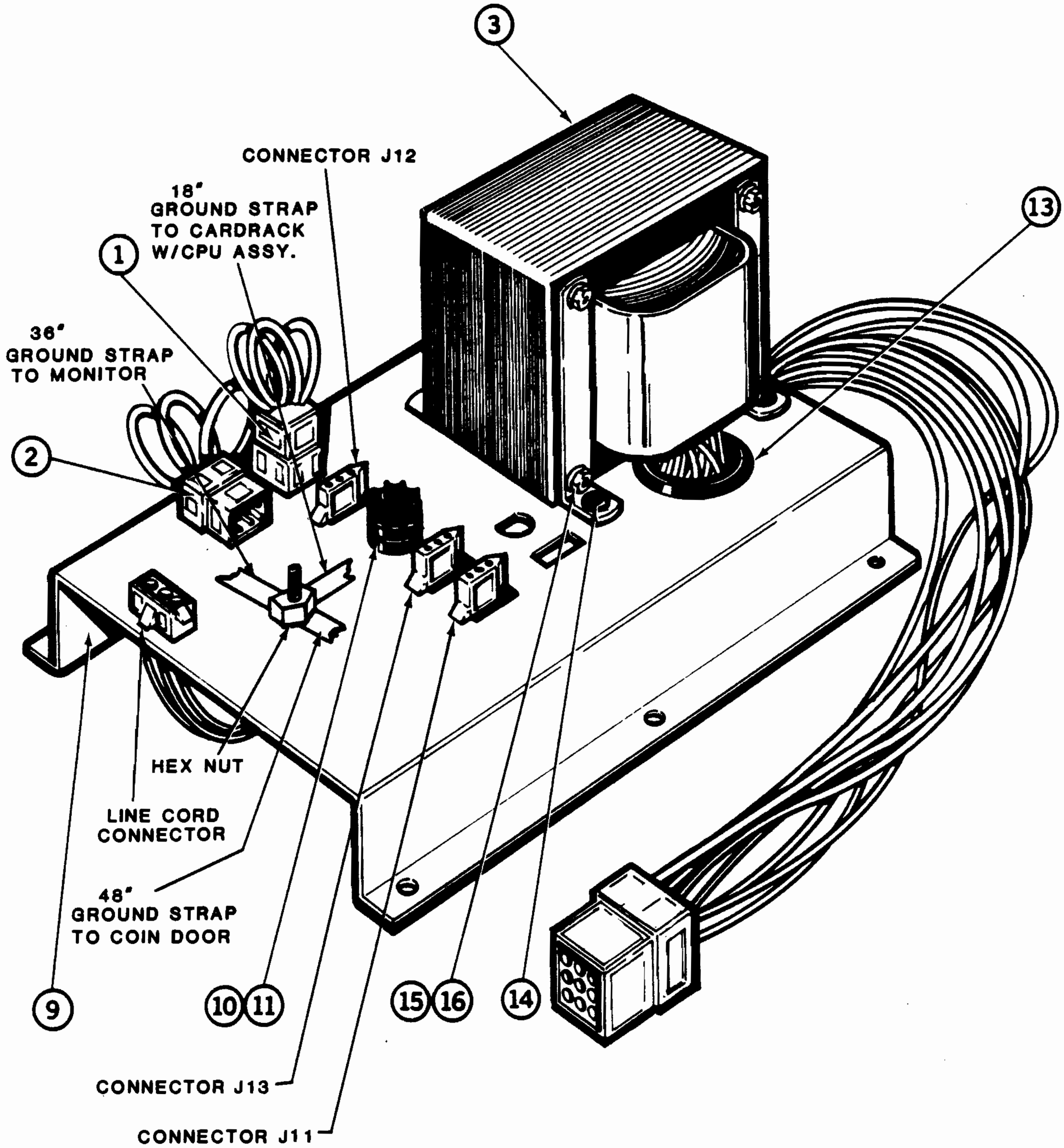
ITEM	PART NO.	DESCRIPTION
1	AJ18-00005-0000	CONTROL SHELF CABLE ASSY.
2	AJ18-00007-0000	MASTER CABLE ASSY.
3	AJ18-00013-0000	ON-OFF SWITCH CABLE ASSY.
4	AJ18-00014-0000	CHASSIS POWER CABLE ASSY.
5	AJ18-00009-0000	SPEAKER CABLE ASSY.
6	AE36-00021-0000	JOYSTICK ASSY.: SHAFT & PLATE; 8-WAY (2 REQ'D.) (SEE PAGE 18)
7	0J18-00900-00XF	HEADER: RESCUE RAIDER UNIVERSAL FIELD KIT
8	0J18-00903-0000	BEZEL: MASK-TV
9	0J18-00901-0000	OVERLAY: CONTROL SHELF
10	0J18-00902-0000	SIDE DECAL (2 REQ'D.)
	AC52-00018-0000	POWER SUPPLY AUDIO BD. & MTG. PLATE (INCLUDES ITEMS 11 THRU 13)
11	AC52-00007-0000	POWER SUPPLY & AUDIO BD. MOUNTING PLATE
12	B006-08002-100B	AUDIO 6VB BD. ASSY.
13	B006-08009-100B	LINEAR POWER SUPPLY BD. ASSY.
14	AJ18-00011-0000	POWER CHASSIS (W/O LINE CORD) (SEE PAGE 16)
15	AC47-00016-0000	LINE FILTER ASSY. W/PINS
	0017-00003-0443	LINE FILTER: 3-AMP 115V
16	AB18-00024-0100	JUMPER PLUG ASSY.: 110 VAC
17	AB18-00024-0200	JUMPER PLUG ASSY.: 220 VAC
18	0C52-00101-0000	PLATE: POWER CHASSIS
19	0017-00003-0263	FUSE: MDA 3AG 250V SLOW-BLOW
20	0017-00003-0433	FUSE HOLDER: W/CAP
21	0017-00042-0685	BUSHING: SNAP 15/16"
22	0017-00042-0686	BUSHING: SNAP 1-15/16"
	AJ18-00012-0000	CARDRACK W/CPU: (INCLUDES ITEMS 23 THRU 29)
23	AE82-00013-0100	BRKT.,SHIELD & SPACER ASSY.

PART NO. GJ18-00001-0000

ORDER BY PART NUMBER **ONLY**

ITEM	PART NO.	DESCRIPTION
	A084-91889-AJ11	PROGRAMMED DEDICATED CPU: (INCLUDES ITEMS 24 THRU 29)
24	J11A-12601-0000	EPROM: 27256-25 POSITION GR-0
25	J11A-12602-0000	EPROM: 27256-25 POSITION GR-4
26	J11A-12605-0000	EPROM: 27256-25 POSITION ROM AB-8
27	J11A-12606-0000	EPROM: 27256-25 POSITION ROM AB-12
28	J11A-12609-0000	EPROM: 27256-25 POSITION ROM CD-8
29	J11A-12610-0000	EPROM: 27256-25 POSITION ROM CD-12
	AJ18-00010-0000	BAG & HARDWARE ASSY. (INCLUDES ITEMS 30 THRU 44)
30	0017-00032-0093	SWITCH: WHITE, W/HOLDER (2 REQ'D.)
31	0017-00032-0150	SWITCH: SPST PUSH BUTTON W/LITE, RED
32	0017-00042-0259	PUSH BUTTON (2 REQ'D.)
33	0017-00009-0583	GROUND STRAP - 18" LONG - YELLOW (2 REQ'D.)
34	0017-00009-0583	GROUND STRAP - 36" LONG - YELLOW
35	0017-00009-0595	GROUND STRAP - 48" LONG - YELLOW
36	M051-00J18-A012	LABEL: GAME INSTRUCTIONS
37	0017-00021-1119	PIN TERMINALS: M-N-L (10 REQ'D.)
38	0017-00021-1770	PLUG (CONNECTOR HOUSING): M-N-L 3-POSITION (2 REQ'D.)
39	0017-00101-0770	8-32 X 1-3/4" ROUND HEAD CARRIAGE BOLT (8 REQ'D.)
40	0017-00101-0802	#8 X 9/16" UNSLOTTED HEX HEAD W/WASHER SCREW (2 REQ'D.)
41	0017-00103-0054	NUT: 5/8 - 11 PAL
42	0017-00103-0061	NUT: 8-32 HEX W/SEMS
43	103E-00003-0005	1N4004 400V 1 AMP DIODE
44	100E-00007-0019	RESISTOR: 270 OHMS 1 WATT
45	AJ18-00300-0000	CATALOG & BAG ASSY.: RESCUE RAIDER UNIVERSAL FIELD KIT
	M051-00J18-A011	INSTRUCTIONS: RESCUE RAIDER UNIVERSAL FIELD KIT
	M051-00J18-A007	TAG: OPTION SWITCH SETTING
	M051-00113-0000	LABEL: FCC CLASS-A COMPLIANCE

POWER CHASSIS ASSEMBLY
PART NO. AJ18-00011-0000

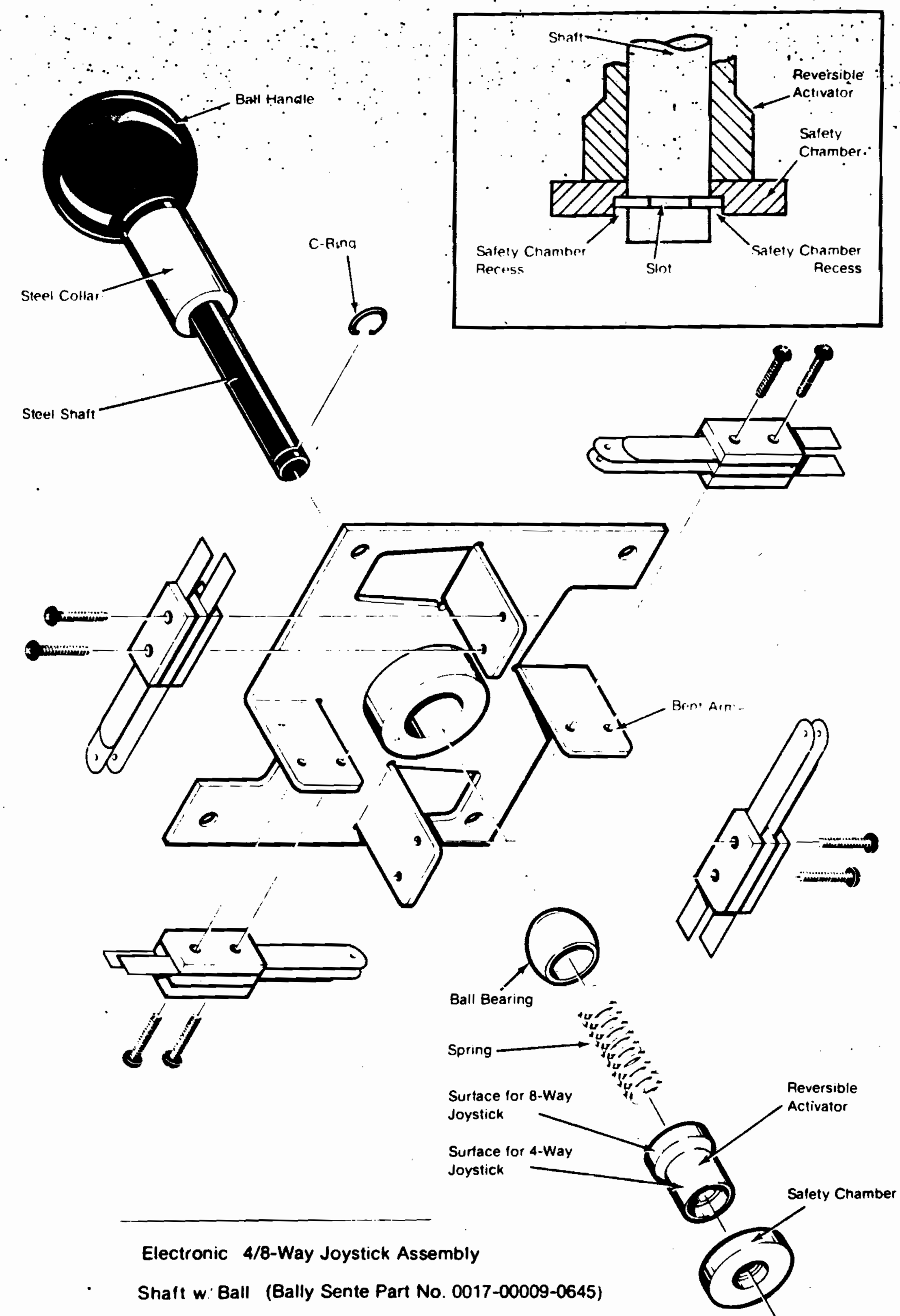


POWER CHASSIS ASSEMBLY
PART NO. AJ18-00011-0000

ORDER BY PART NUMBER **ONLY**

ITEM	PART NO.	DESCRIPTION
1	AB18-00024-0100	JUMPER PLUG ASSY.: 110VAC (YELLOW)
2	AB18-00024-0200	JUMPER PLUG ASSY.: 220VAC (BLUE)
3	AB18-00034-0000	POWER TRANSFORMER ASSY.: W/PINS
4	AC47-00016-0000	LINE FILTER ASSY.: W/PINS
	0017-00003-0443	LINE FILTER: 3-AMP 115V
5	AC52-00022-0000	CHASSIS JUMPER CABLE ASSY. (NOT SHOWN)
6	AE19-00005-0000	A.C. SENSE CABLE ASSY. (NOT SHOWN)
7	AE19-00005-0100	A.C. SENSE CABLE SUB-ASSY. (NOT SHOWN)
8	0C52-00101-0000	PLATE: POWER CHASSIS
9	0017-00003-0263	FUSE MDA 3AG, 4 AMP, 250V, SLOW-BLOW
10	0017-00003-0433	FUSE HOLDER: W/CAP
11	0017-00042-0685	SNAP-BUSHING: 15/16"
12	0017-00042-0686	SNAP-BUSHING: 1-15/16"
13	0017-00101-0477	10-24 X 10/16" ROUND HEAD, SQUARE NECK BOLT (4 REQ'D.)
14	0017-00101-0555	6-32 X 5/16" SLOTTED, HEX W/WASHER SCREW (2 REQ'D.) (NOT SHOWN)
15	0017-00103-0017	NUT: #10-24 HEX (4 REQ'D.)
16	0017-00104-0125	WASHER: .200" I.D., .562" O.D. & .032" TH. DISH (4 REQ'D.)

JOYSTICK ASSY.: SHAFT & PLATE
PART NO. AE36-00021-0000



Electronic 4/8-Way Joystick Assembly

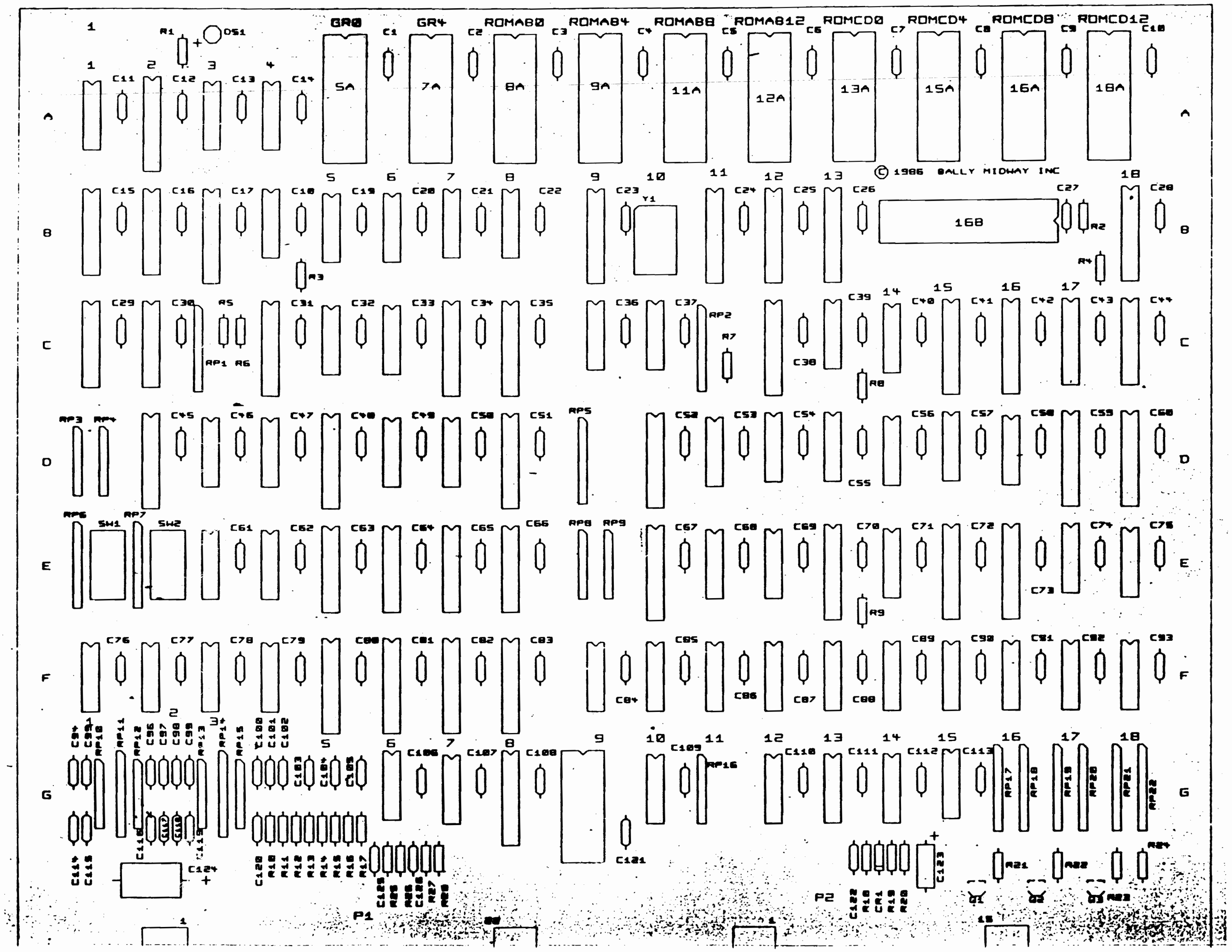
Shaft w/ Ball (Bally Sente Part No. 0017-00009-0645)

Plate w/ Switches (Bally Sente Part No. 0017-00009-0686)

BALLY/MIDWAY RESCUE RAIDER
ROM/EPROM PART NUMBERS
M051-00J18-A008

POS	PART NUMBER
GR0	J11A-12601-0000
GR4	J11A-12602-0000
AB8	J11A-12605-0000
AB12	J11A-12606-0000
CD8	J11A-12609-0000
CD12	J11A-12610-0000

3-5-87 REL. FOR PROD.



THIS DWG IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC.	FIRST USED ON			Bally/MIDWAY MFG. CO. FRANKLIN PARK, IL 60131	Rel for Production J.S. 3/13/87
CONCENTRICITY T.I.R. .002 FRACTIONAL ± 1/64 DECIMAL ± .005	DRN Y.S.	DATE 3-13-87	SCALE		REVISIONS
HOLE DIA. +.002 –.000 ANGLE ± 1/2°	MECH CHK	MAT'L		UN-PROG SMUDGE CPU BD. ASSEMBLY DRWG. A084-91889-A000	PART NO. M051-00114-A192
DO NOT SCALE DWG.	ELEC CHK Y.S.	FINISH			

M051-00114-A193
X-REFERENCE SMUDGE CPU
A084-91889-A000 / PAGE 1 OF 3

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
74F153	1	9F	0J13-00803-0001
74F163	8	5C,6C,14C,4D,4E, 14E,14F,15F	0J13-00803-0002
74F174	1	11D	0A59-00803-0005
74F374	2	2D,10E	U200-00080-0100
74LS00	1	9C	U200-00039-0100
74LS02	1	4B	U200-00040-0100
74LS04	1	15G	U200-00041-0100
74LS32	1	13D	U200-00043-0100
74LS74	1	13C	U200-00044-0100
74LS86	2	7B,8B	U200-00075-0100
74LS96	1	14D	U200-00045-0100
74LS138	1	13G	U200-00048-0100
74LS157	3	3D,3E,4A	0304-00803-0021
74LS164	1	15D	U200-00076-0100
74LS174	4	3A,5B,6B,7G	U200-00053-0100
74LS243	1	17E	0J13-00803-0003
74LS244	4	13B,18B,7C,18D	U200-00055-0100
74LS245	1	16C	U200-00056-0100
74LS253	6	6D,7D,1F,2F 3F,4F	U200-00057-0100
74LS257	1	1A	U200-00078-0100
74LS259	1	12G	U200-00058-0100
74LS273	1	2A	U200-00059-0100
74LS299	1	15C	U200-00077-0100
74LS374	6	8C,12C,5D,8D 5F,7F	U200-00060-0100
74S04	1	10C	U200-00063-0100
74S74	1	12D	U200-00066-0100
74S151	6	11E,12E,10F,11F, 12F,13F	U200-00067-0100
74S157	1	16D	U200-00068-0100
74S174	2	16F,18F	U200-00070-0100
74S175	2	18E,17F	0J13-00803-0006
74S244	3	3B,6F,8F	0J13-00803-0004
74S374	1	9B	0J13-00803-0005
14049,CMOS	1	14G	U210-00005-0100
14584,CMOS	1	6G	0304-00803-0056
ULN-2003	1	10G	U260-00002-0100

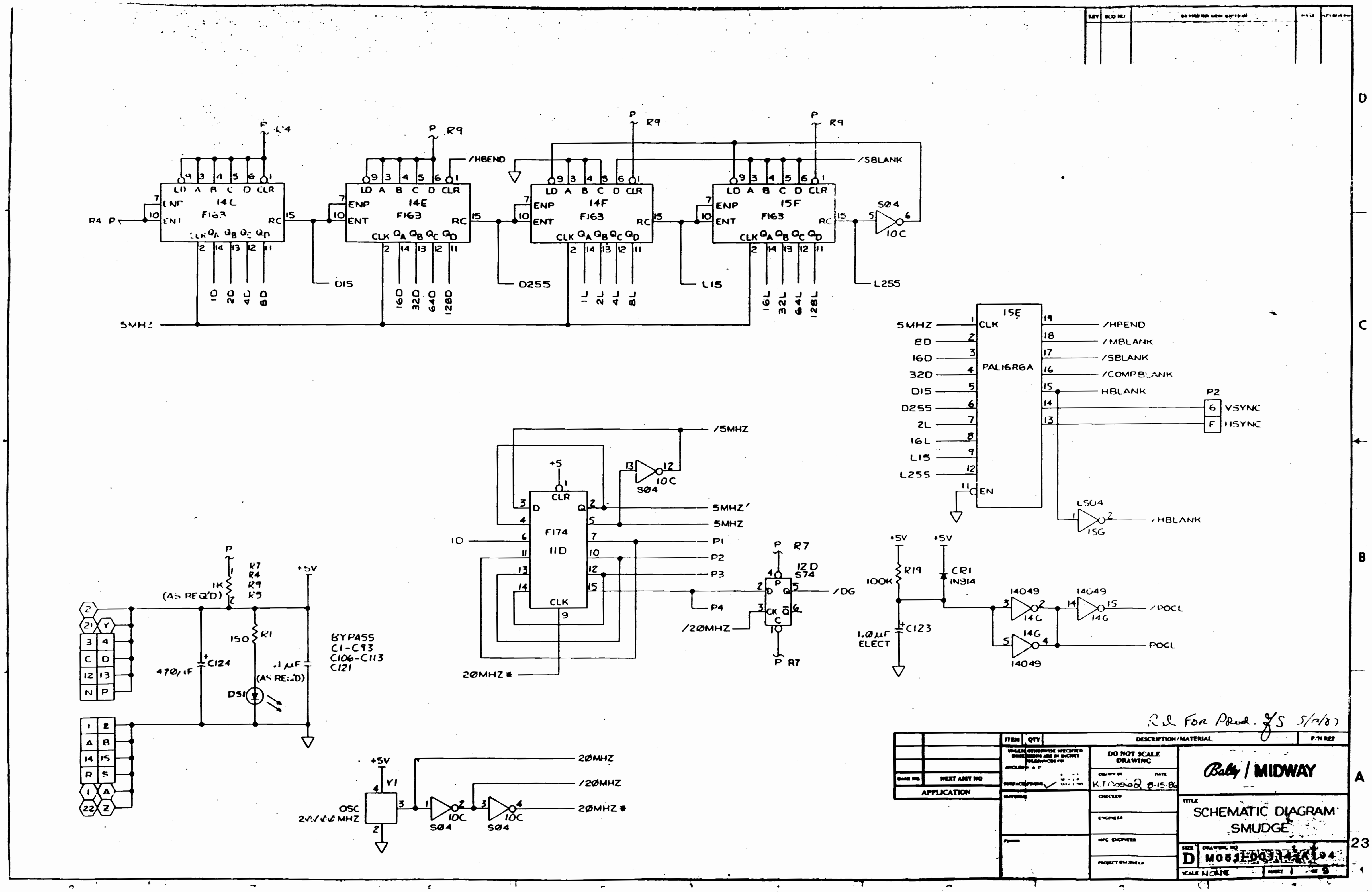
M051-00114-A193
X-REFERENCE SMUDGE CPU
A084-91889-A000 / PAGE 2 OF 3

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
4416-15,DRAM,16KX4	8	1B,2B,1C,2C,5E, 6E,7E,8E	0J13-00803-0008
CY7C168,S RAM,4KX4	1	17D	0J13-00803-0007
X2212,NOVRAM,256X4	2	17C,18C	U230-00007-0100
PAL 10L8C	1	11B	J13A-12802-0000
PAL 16L8A-2	1	12B	J13A-12801-0000
PAL 16R6A	1	4C	J13A-12803-0000
PAL 16R6A	1	10D	J13A-12804-0000
PAL 16R6A	1	15E	J13A-12805-0000
PAL 16R6A	1	16E	J13A-12806-0000
PAL 16R6A	1	8G	J13A-12807-0000
68A09E	1	16B	U250-00006-0100
68B50	1	9G	U250-00010-0100
20 MHZ OSC.	1	Y1	0304-00804-0007
LED	1	DS1	U840-00036-0100
1N914 DIODE	1	CR1	103E-00002-0002
2N3904 XSTR	3	Q1,Q2,Q3	104E-00001-0006
8-POS. DIP SW.	2	SW1,SW2	113E-00001-0003
IC SOCKET 20-PIN	7	11B,12B,4C,10D 15E,16E,8G	110E-00001-0005
IC SOCKET 24-PIN	1	9G	110E-00001-0007
IC SOCKET 28-PIN	10	5A,7A,8A,9A,11A 12A,13A,15A,16A 18A	110E-00001-0010
IC SOCKET 40-PIN	1	16B	110E-00001-0011
RESISTOR 150 OHM 1/4W	1	R1	100E-00005-0037
RESISTOR 330 OHM 1/4W	6	R11,R13,R15,R17, R25,R27	100E-00005-0047
RESISTOR 1K OHM 1/4W	10	R3-R5,R7-R9,R21-R24	100E-00005-0061
RESISTOR 2.7K OHM 1/4W	1	R20	100E-00005-0072
RESISTOR 3.3K OHM 1/4W	6	R10,R12,R14,R16 R26,R28	100E-00005-0074
RESISTOR 4.7K OHM 1/4W	1	R2	100E-00005-0079
RESISTOR 10K OHM 1/4W	1	R6	100E-00005-0088
RESISTOR 100K OHM 1/4W	2	R18,R19	100E-00005-0115

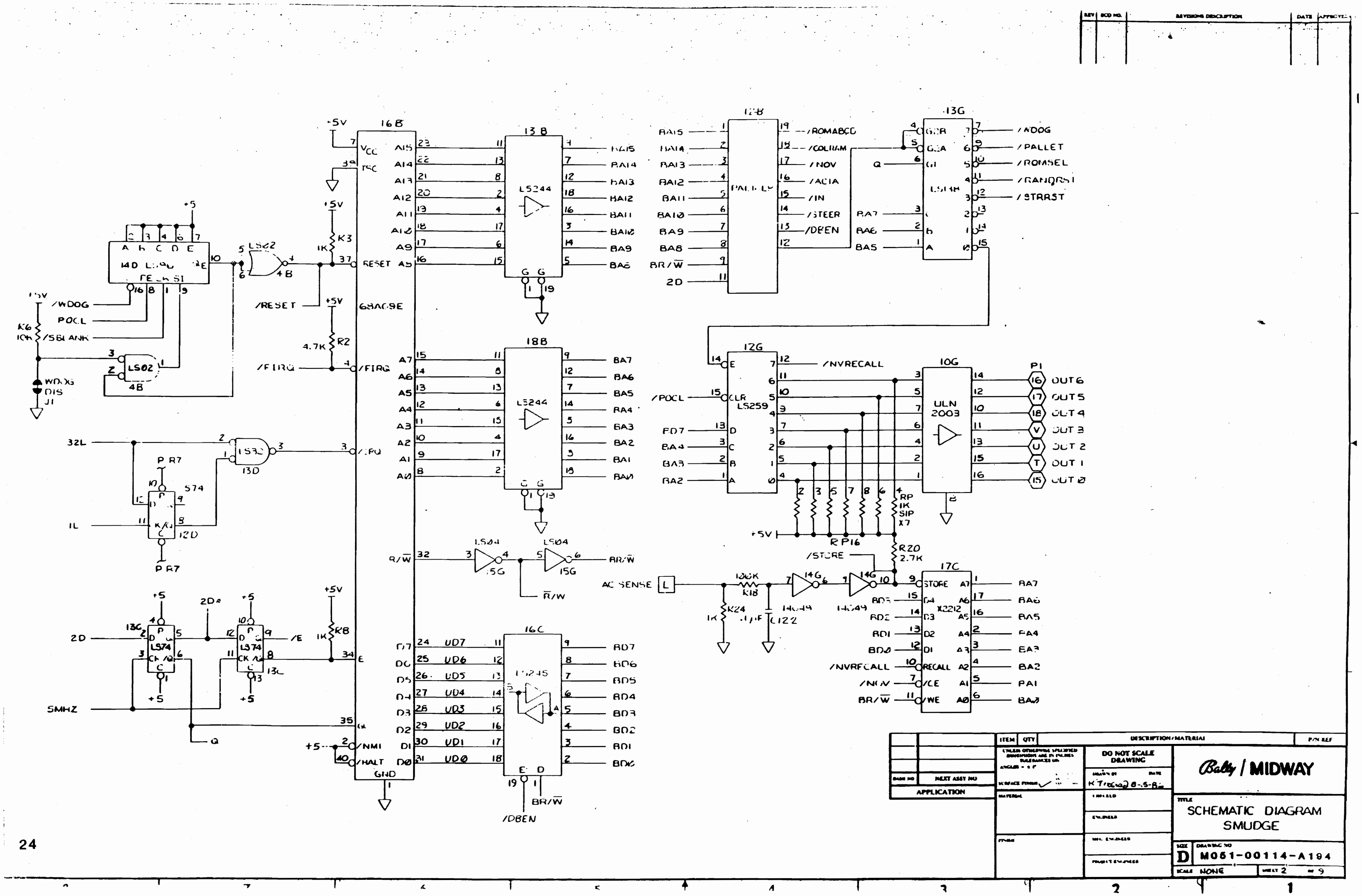
M051-00114-A193
X-REFERENCE SMUDGE CPU
A084-91889-A000 / PAGE 3 OF 3

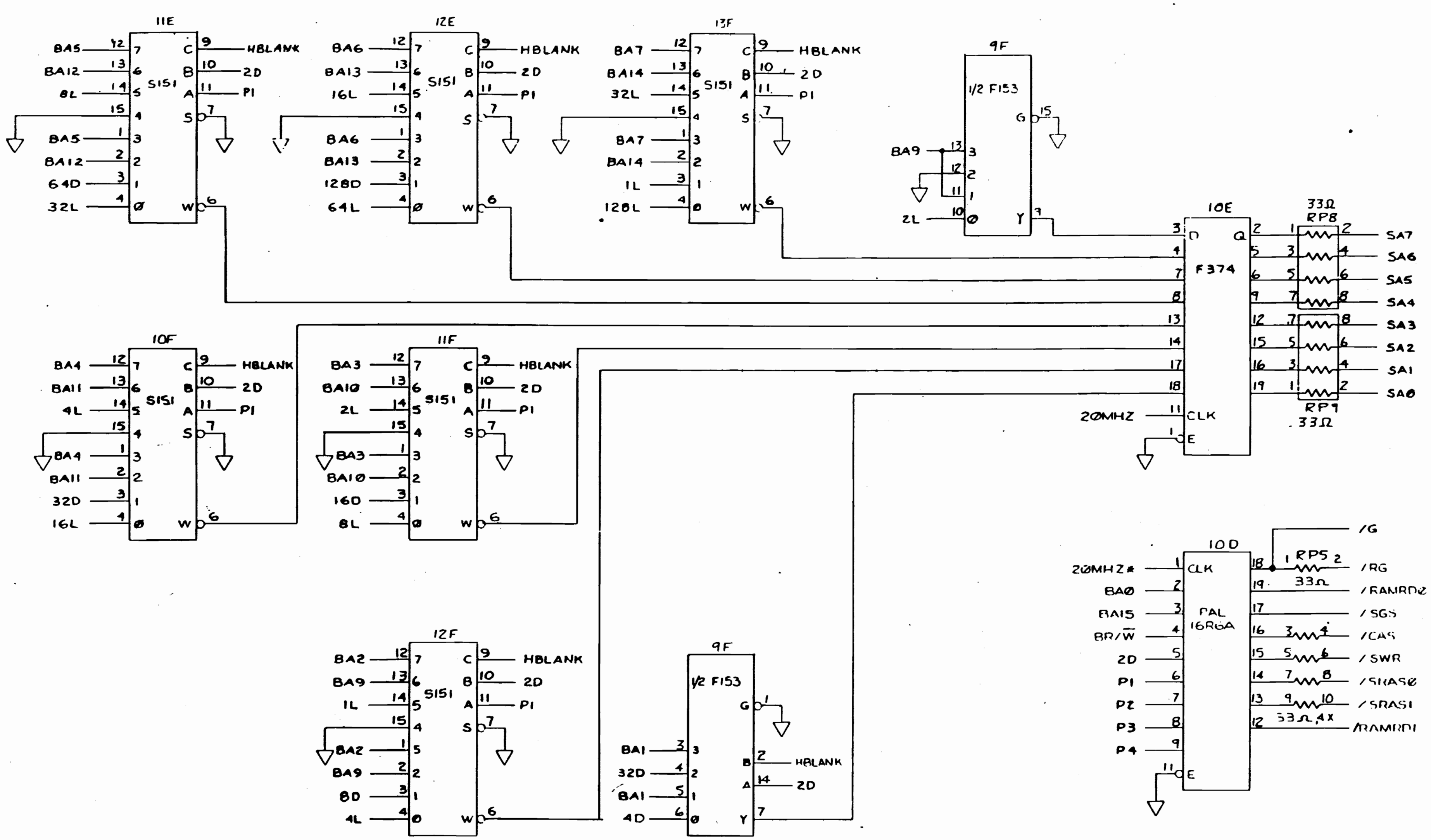
DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
SIP 8-PIN 4X33	6	RP3-4,RP8-9 RP13,RP15	U460-00015-0100
SIP 10-PIN 5X33	2	RP1,RP5	U460-00016-0100
SIP 10-PIN 9X470	2	RP11,RP14	U460-00012-0100
SIP 8-PIN 7X1K	1	RP16	U460-00014-0100
SIP 8-PIN 4X1K	2	RP10,RP12	102E-00004-0046
SIP 10-PIN 9X1K	1	RP2	102E-00004-0013
SIP 10-PIN 5X1K	3	RP17,RP19,RP21	102E-00004-0047
SIP 10-PIN 5X2K	3	RP18,RP20,RP22	102E-00004-0048
SIP 10-PIN 9X10K	2	RP6,RP7	U460-00013-0100
CAP. CER. AX. .1MF	124	C1-C122,C125,C126	U300-00009-0100
CAP. EL. AX. 1MF	1	C123	U340-00015-0100
CAP. EL. AX. 470MF	1	C124	U340-00018-0100
EPROM	10	5A,7A,8A,9A,11A,12A, 13A,15A,16A,18A	SEE ROM/EPROM SHEET
RAW PCB	1	-	A080-91889-A000

Rel. for Production 3-12-87 / J.S.



14C F163
14E F163
14F F163
15F F163
/HBEND
/SBLANK
R4
R9
5MHZ
D15
D255
L15
L255
1D 2D 4D 8D
16D 32D 64D 128D
1L 2L 4L 8L
16L 32L 64L 128L
S04 10C
15E PAL16R6A
/HBEND
/MBLANK
/SBLANK
/COMPBLANK
HBLANK
P2
VSYNC
HSYNC
LS04 15G
/HBLANK
/5MHZ
5MHZ'
5MHZ
F174 11D
P1 P2 P3 P4
12D S74
/DG
/20MHZ
20MHZ#
R7
R19 100K
CR1 1N914
1.0µF ELECT C123
14049 14G
/POCL
POCL
1K (AS REQ'D)
R7 R4 R9 R5
150 R1
470µF C124
.1µF
(AS REQ'D)
DS1
BYPASS C1-C93 C106-C113 C121
+5V
OSC 20.000 MHZ
Y1
20MHZ
/20MHZ
20MHZ#
Rel For Prod. JS 5/11/87
DO NOT SCALE DRAWING
APPLICATION
Bally / MIDWAY
SCHEMATIC DIAGRAM SMUDGE
D
SCALE NONE
D C B A
23


16B
68A09E
VCC
TSC
RESET
/FIRQ
/IRQ
R/W
E
Q
/NMI
/HALT
GND
+5V
13B
LS244
18B
LS244
16C
LS245
12B
PALLET
13G
LS138
12G
LS259
10G
ULN 2003
17C
X2212
STORE
RECALL
/CE
/WE
14D
LS02
4B
LS32
13D
LS74
13C
LS04
15G
14G
14C49
P1
OUT 6
OUT 5
OUT 4
OUT 3
OUT 2
OUT 1
OUT Ø
/WDOG
/PALLET
/ROMSEL
/RANGRST
/STRRST
/ROMABCD
/COLRAM
/NOV
/ACIA
/IN
/STEER
/DBEN
/NVRECALL
/POCL
/STORE
/RESET
/SBLANK
WDOG DIS J1
32L
1L
2D
SMHZ
AC SENSE
R/W
BR/W
RP 1K SIP X7
RP16
R20 2.7K
R2 4.7K
K3 1K
K6 10K
K8 1K
K18 100K
K24 1K
C122
Bally / MIDWAY
DO NOT SCALE DRAWING
APPLICATION
NEXT ASSY NO
SCHEMATIC DIAGRAM
SMUDGE
D
M051-00114-A194
SCALE NONE
SHEET 2 OF 9



DO NOT SCALE DRAWING

NEXT ASSY NO

APPLICATION

8-15-86

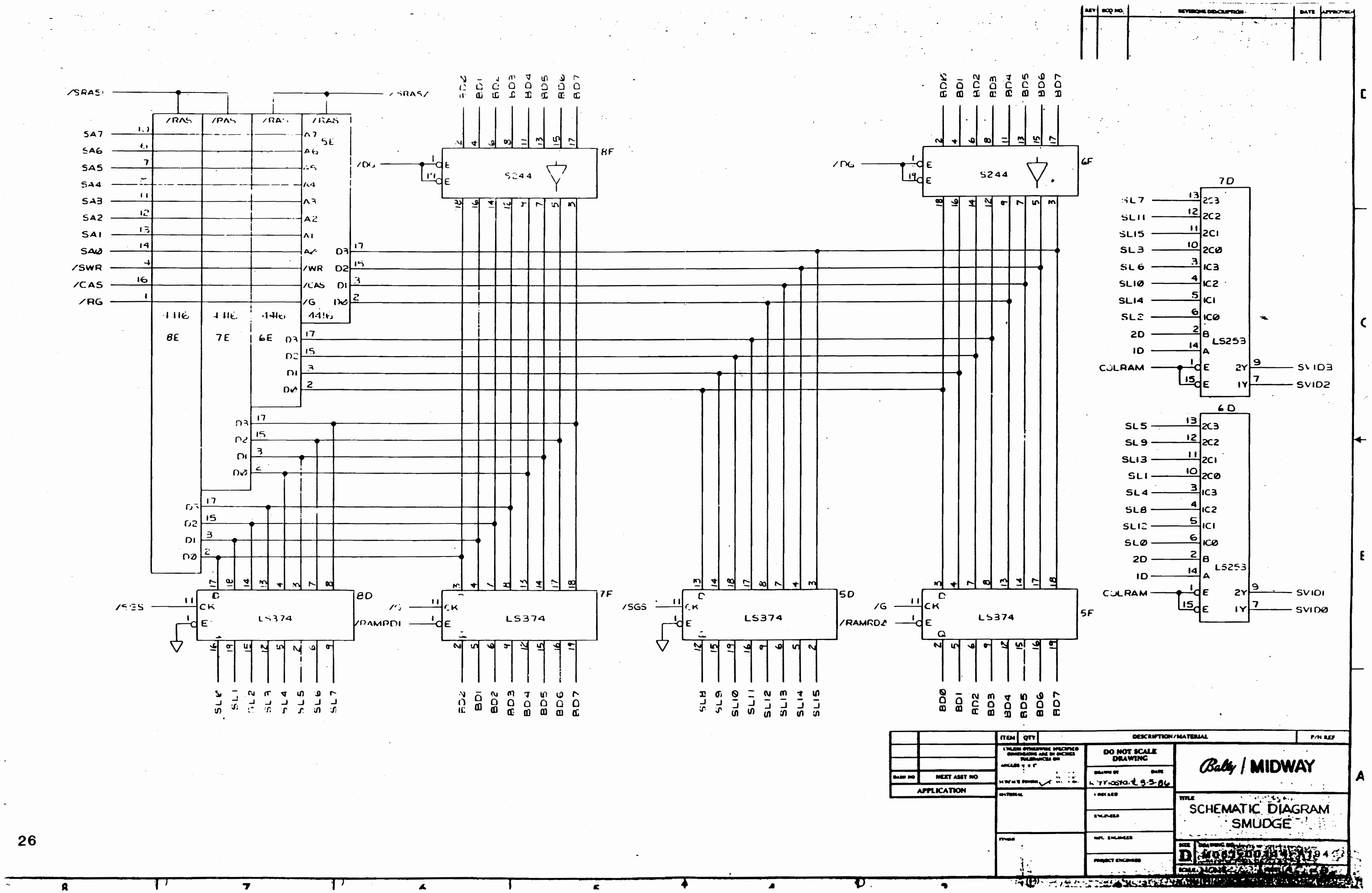
Bally / MIDWAY

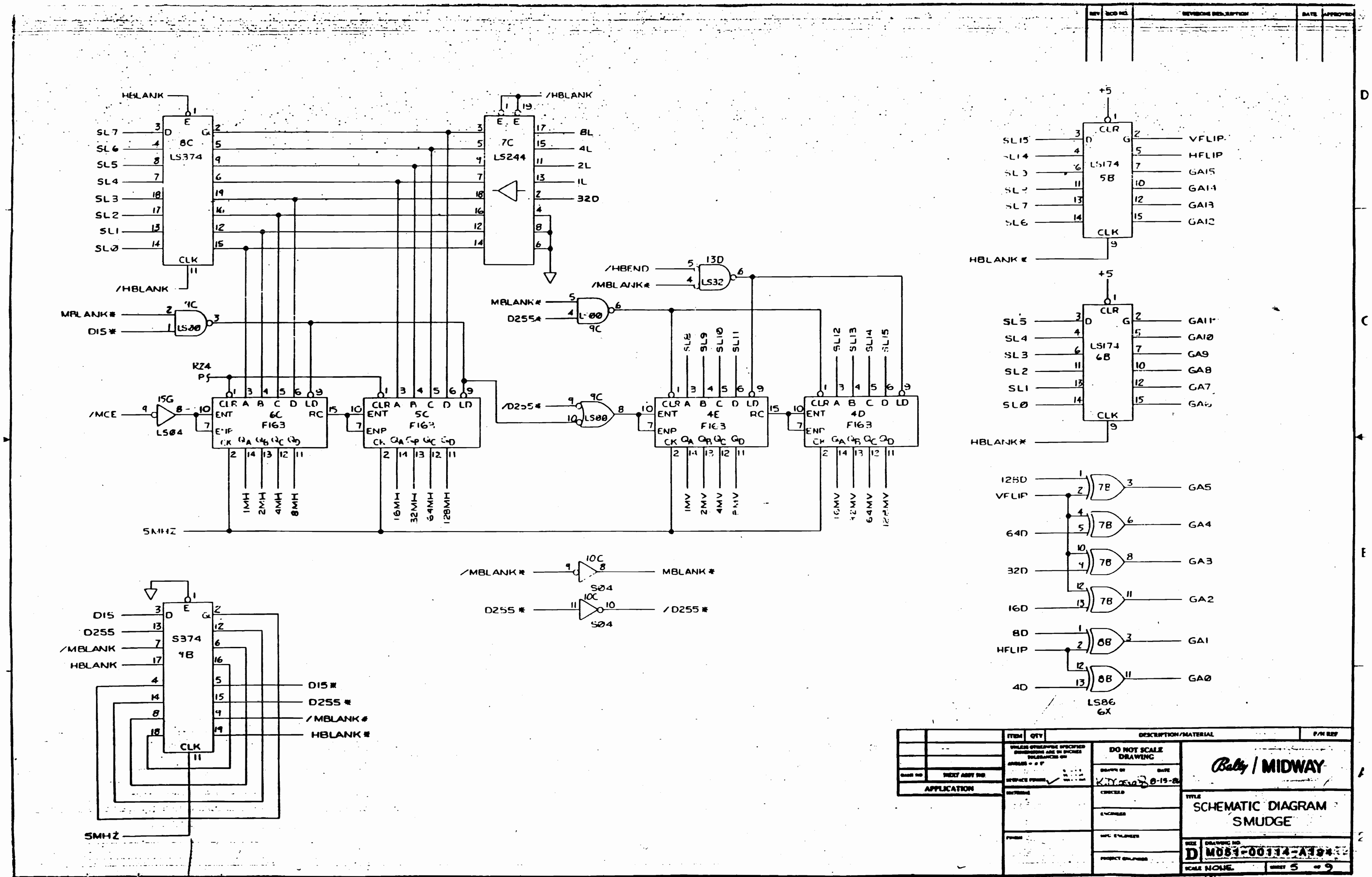
SCHEMATIC DIAGRAM
SMUDGE

D M051-00114-A194

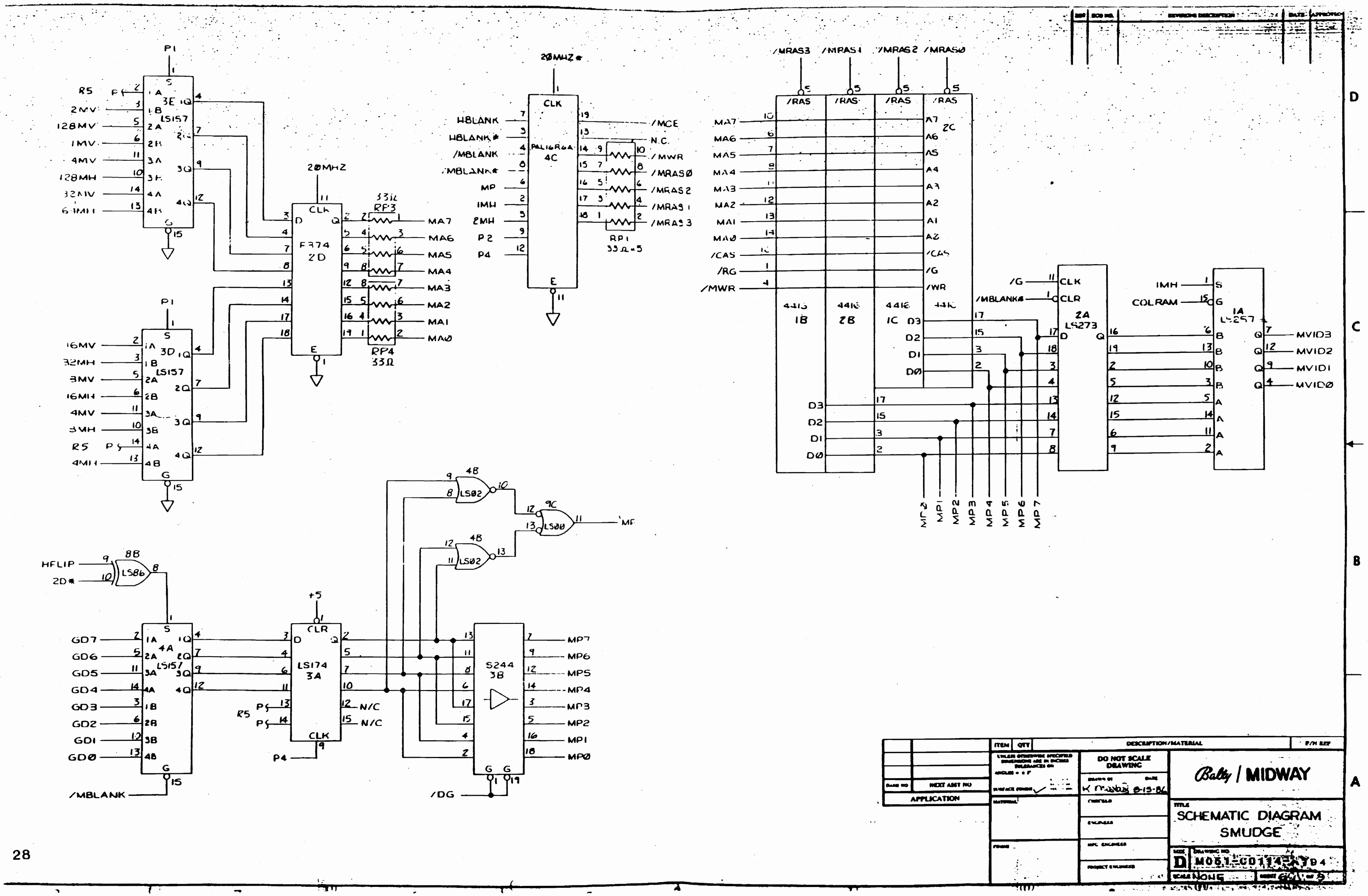
SCALE NONE

SHEET 3 OF 5

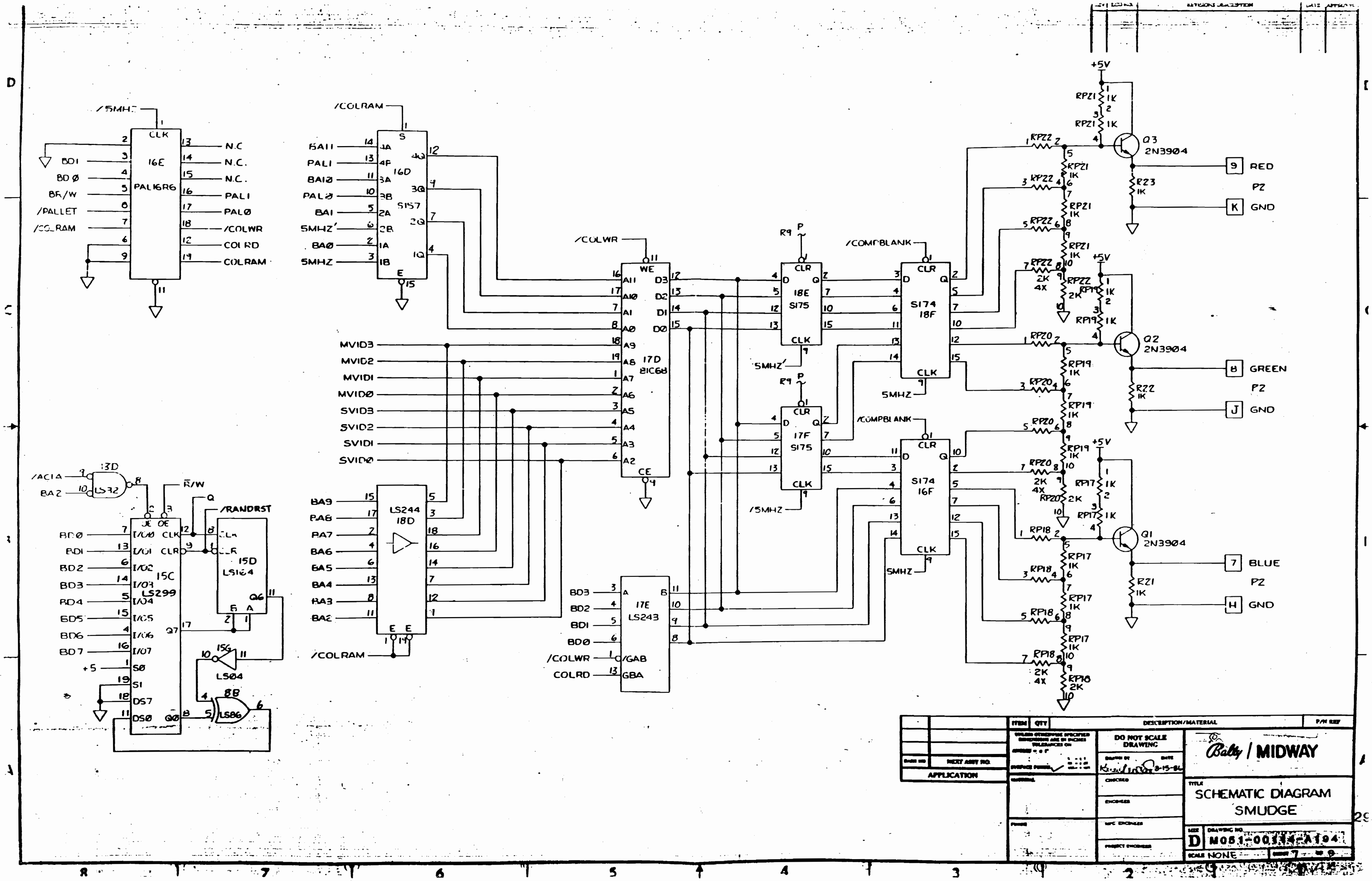

/SRAS1
/SRAS2
SA7
SA6
SA5
SA4
SA3
SA2
SA1
SAØ
/SWR
/CAS
/RG
/RAS
A7
A6
A5
A4
A3
A2
A1
AØ
/WR
/CAS
/G
D3
D2
D1
DØ
4416
8E
7E
6E
5E
/DG
S244
8F
6F
BDØ
BD1
BD2
BD3
BD4
BD5
BD6
BD7
LS374
8D
7F
5D
5F
/SGS
/G
/RAMRD1
/RAMRD2
CK
SLØ
SL1
SL2
SL3
SL4
SL5
SL6
SL7
SL8
SL9
SL10
SL11
SL12
SL13
SL14
SL15
LS253
7D
6D
2C3
2C2
2C1
2CØ
1C3
1C2
1C1
1CØ
2D
1D
COLRAM
2Y
1Y
SVID3
SVID2
SVID1
SVIDØ
DO NOT SCALE DRAWING
APPLICATION
NEXT ASSY NO
Bally / MIDWAY
SCHEMATIC DIAGRAM
SMUDGE



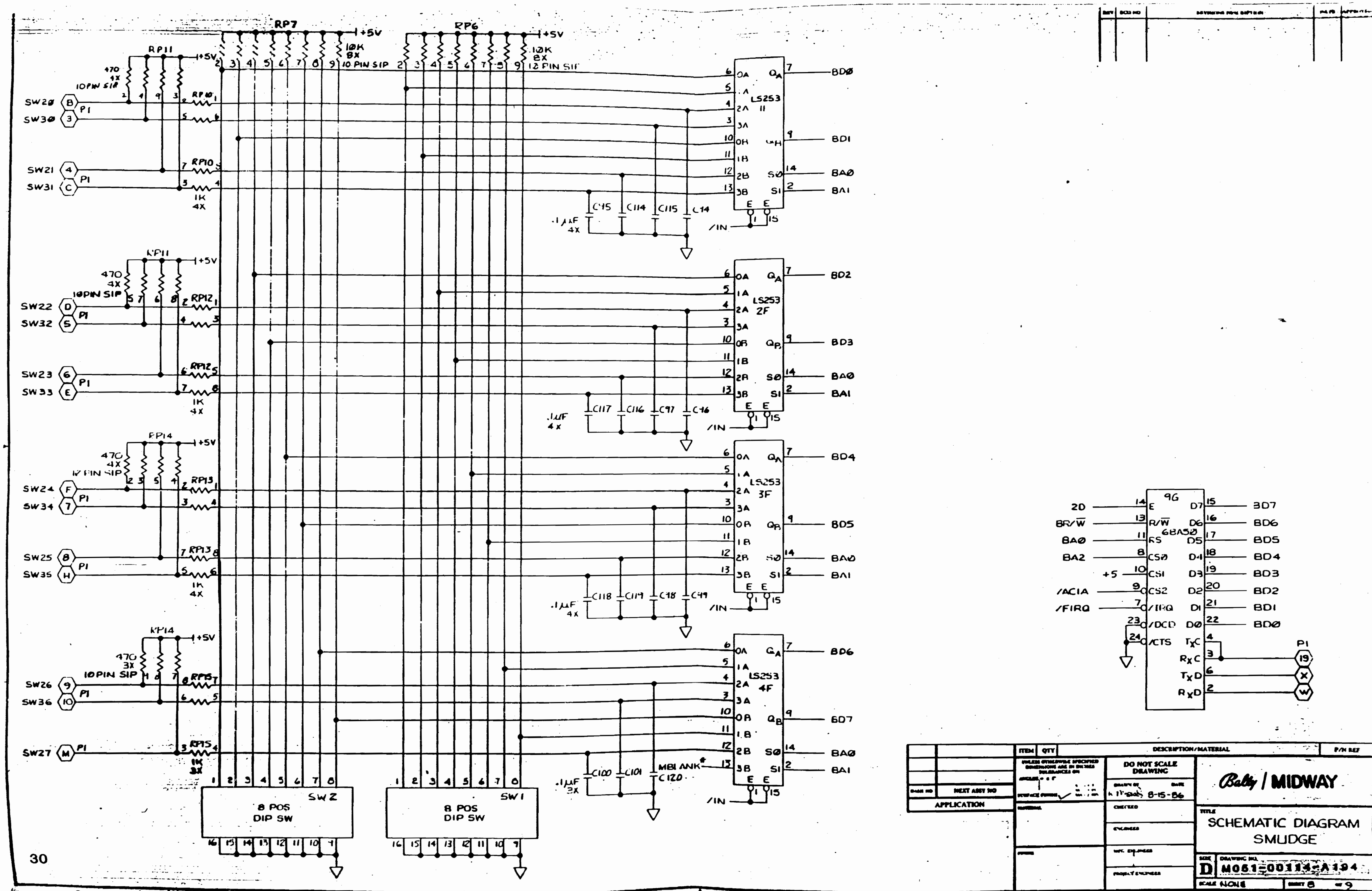
DO NOT SCALE DRAWING	Bally / MIDWAY
APPLICATION	
TITLE	SCHEMATIC DIAGRAM SMUDGE
SIZE	D
DRAWING NO.	M051-00114-A394
SCALE	NONE
SHEET	5 OF 9

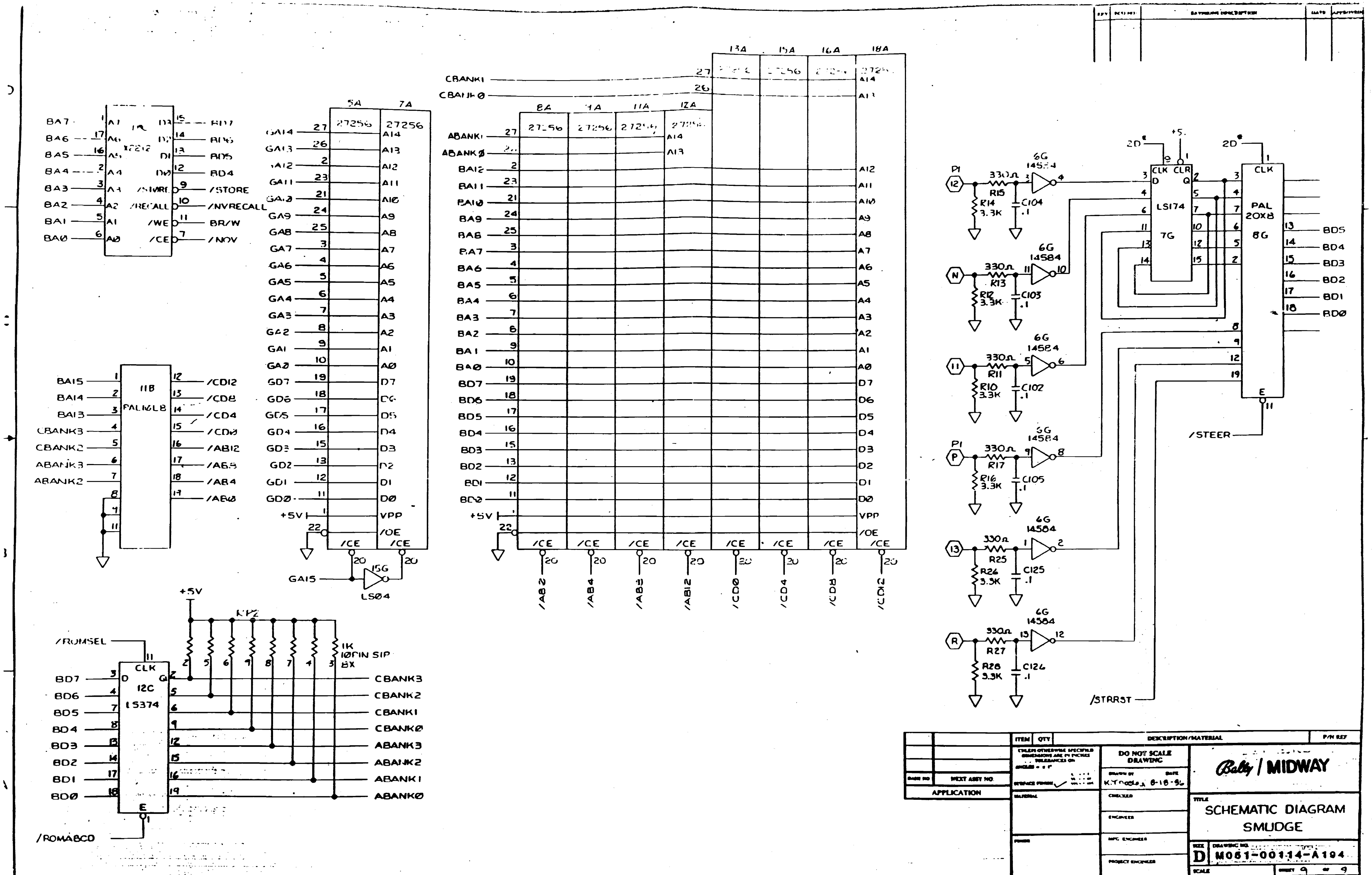


P1
R5
2MV
128MV
1MV
4MV
128MH
32MV
64MH
3E
LS157
P1
16MV
32MH
8MV
16MH
4MV
8MH
R5
4MH
3D
LS157
20MHZ
F374
2D
33Ω
RP3
MA7
MA6
MA5
MA4
MA3
MA2
MA1
MAØ
RP4
33Ω
20MHZ*
HBLANK
HBLANK*
/MBLANK
/MBLANK*
MP
1MH
8MH
P2
P4
PAL16R6A
4C
/MCE
N.C.
/MWR
/MRASØ
/MRAS2
/MRAS1
/MRAS3
RP1
33Ω×5
/MRAS3
/MRAS1
/MRAS2
/MRASØ
/RAS
/CAS
/RG
/MWR
4416
1B
2B
1C
2C
D3
D2
D1
DØ
/G
/MBLANK*
2A
LS273
1MH
COLRAM
1A
LS257
MVID3
MVID2
MVID1
MVIDØ
MPØ
MP1
MP2
MP3
MP4
MP5
MP6
MP7
4B
LS02
9C
LS00
MF
HFLIP
2D*
8B
LS86
GD7
GD6
GD5
GD4
GD3
GD2
GD1
GDØ
4A
LS157
/MBLANK
+5
LS174
3A
CLR
CLK
N/C
R5
P4
S244
3B
/DG
DO NOT SCALE DRAWING
Bally / MIDWAY
SCHEMATIC DIAGRAM
SMUDGE
APPLICATION
NEXT ASSY NO
DESCRIPTION/MATERIAL
D
NONE



16E
PAL16R6
16D
S157
17D
81C68
18E
S175
17F
S175
18F
S174
16F
S174
18D
LS244
17E
LS243
15C
LS299
15D
LS164
13D
LS32
15G
LS04
8B
LS86
Q3
2N3904
Q2
2N3904
Q1
2N3904
RED
GREEN
BLUE
GND
/5MHZ
/COLRAM
/COLWR
/COMPBLANK
/RANDRST
MVID3
MVID2
MVID1
MVID0
SVID3
SVID2
SVID1
SVID0
COLRD
COLRAM
+5V
DO NOT SCALE DRAWING
APPLICATION
NEXT ASSY NO.
DESCRIPTION/MATERIAL
Bally / MIDWAY
SCHEMATIC DIAGRAM
SMUDGE
M051-00114-A194
SCALE NONE


RP7
+5V
10K
8X
10 PIN SIP
RP6
12 PIN SIP
RP11
470
4X
10PIN SIP
RP10
SW20
SW30
SW21
SW31
P1
1K
4X
LS253
1I
BD0
BD1
BA0
BA1
C15
C114
C115
C14
.1µF
4X
/IN
LS253
2F
SW22
SW32
SW23
SW33
RP12
BD2
BD3
C117
C116
C97
C46
RP14
RP13
SW24
SW34
SW25
SW35
LS253
3F
BD4
BD5
C118
C119
C98
C99
SW26
SW36
SW27
RP15
1K
3X
LS253
4F
BD6
BD7
C100
C101
C120
MBLANK
8 POS
DIP SW
SW2
SW1
9G
68A52
2D
BR/W
BA0
BA2
+5
/ACIA
/FIRQ
BD7
BD6
BD5
BD4
BD3
BD2
BD1
BD0
TxC
RxC
TxD
RxD
DO NOT SCALE DRAWING
8-15-86
APPLICATION
NEXT ASSY NO
Bally / MIDWAY
SCHEMATIC DIAGRAM
SMUDGE
D
M051-00114-A194
NONE



DO NOT SCALE DRAWING

APPLICATION

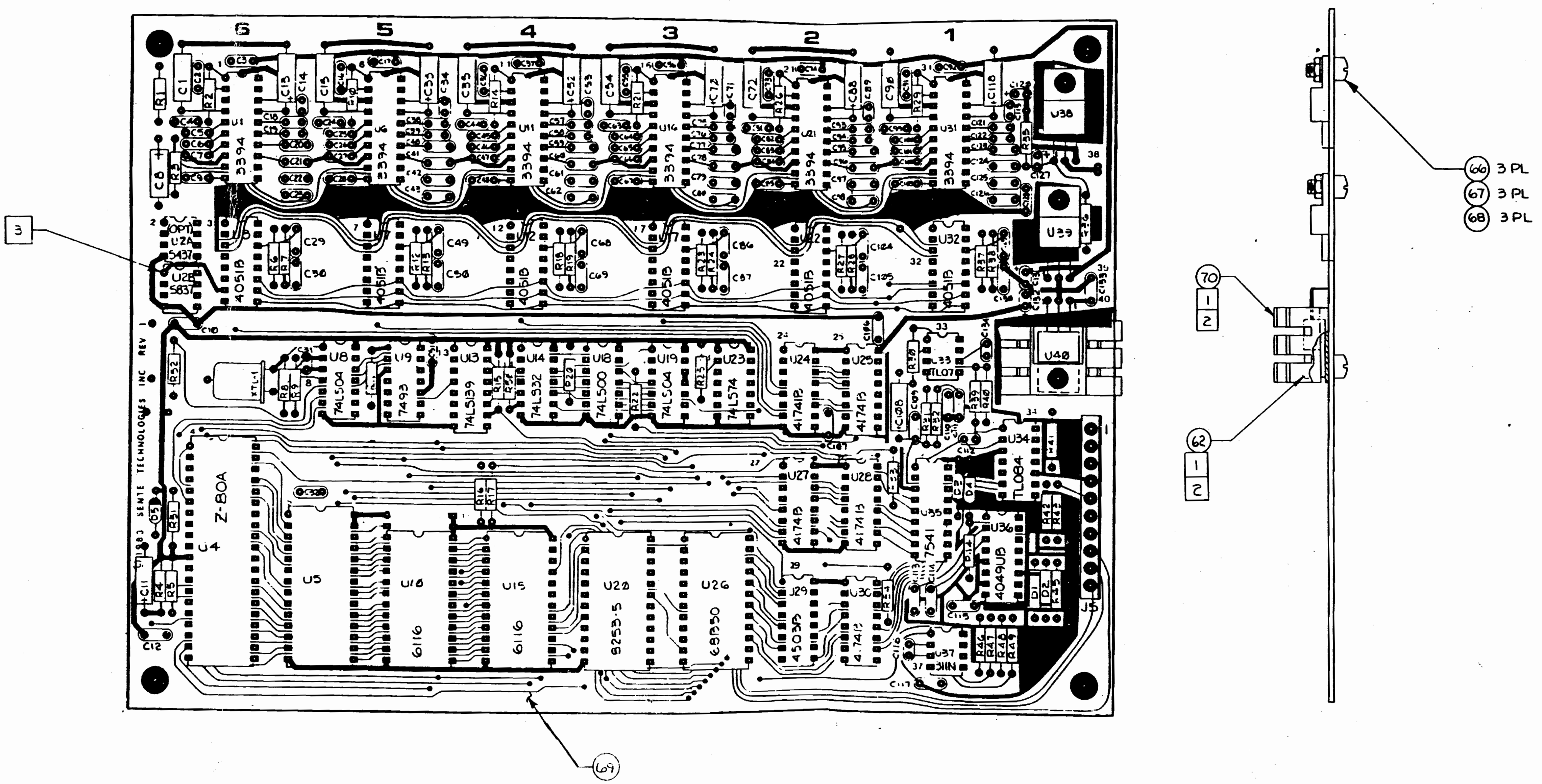
Bally / MIDWAY

SCHEMATIC DIAGRAM
SMUDGE

D M051-00114-A194

SHEET 9 OF 9

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
	1		PROTOTYPE	[illegible]	[illegible]
	A	1892	PRODUCTION RELEASE	[illegible]	[illegible]
1	A	1900	ADDED NOTE 3, REVERSED POLARITY OF C8.	[illegible]	[illegible]
	B	1924	ADDED 2 HEATSINKS, ITEMS 62 & 70	-25-84	[illegible]



NOTES:

1. FASTEN U40 (ITEM 53) TO HEATSINK (ITEM 62), HEATSINK (ITEM 70), AND PCB (ITEM 69), WITH HARDWARE (ITEM 66, 67 & 68) BEFORE SOLDERING TO PCB.
2. APPLY HEATSINK COMPOUND TO HEATSINK (ITEM 62) & HEATSINK (ITEM 70) PRIOR TO MOUNTING.
3. SHORT PIN 1 TO PIN 2 OF U28, AND MOUNT C8 AS SHOWN TO USE AMI 2688 (5837 EQUIV).

RELEASED BY: WES 12/1/85 M051-00C52-B015

		ITEM	DESCRIPTION/MATERIAL	QTY
10	000-8011-10			
DASH NO	NEXT ASSY NO			
USED ON				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = ± 1° X = ± .1 XX = ± .01 XXX = ± .010 SURFACE FINISH ✓

DO NOT SCALE DRAWING

DRAWN BY [illegible] DATE 9-8-83

CHECKED L. Forte 11/14/83

ENGINEER [illegible]

MFG. ENGINEER [illegible] 11/23/83

MATERIAL SEE L/M

FINISH

Bally SENTE 1280 Anvilwood Ave. Sunnyvale CA 94089

TITLE PCB ASSEMBLY, AUDIO, 6VB

SIZE D DRAWING NO. 006-8002-10 [illegible] REV [illegible]

PCB ASSEMBLY, AUDIO 6VB
(006-8002-10-0B) (M051-00C52-B015)
PARTS LIST - SHEET 2 of 4

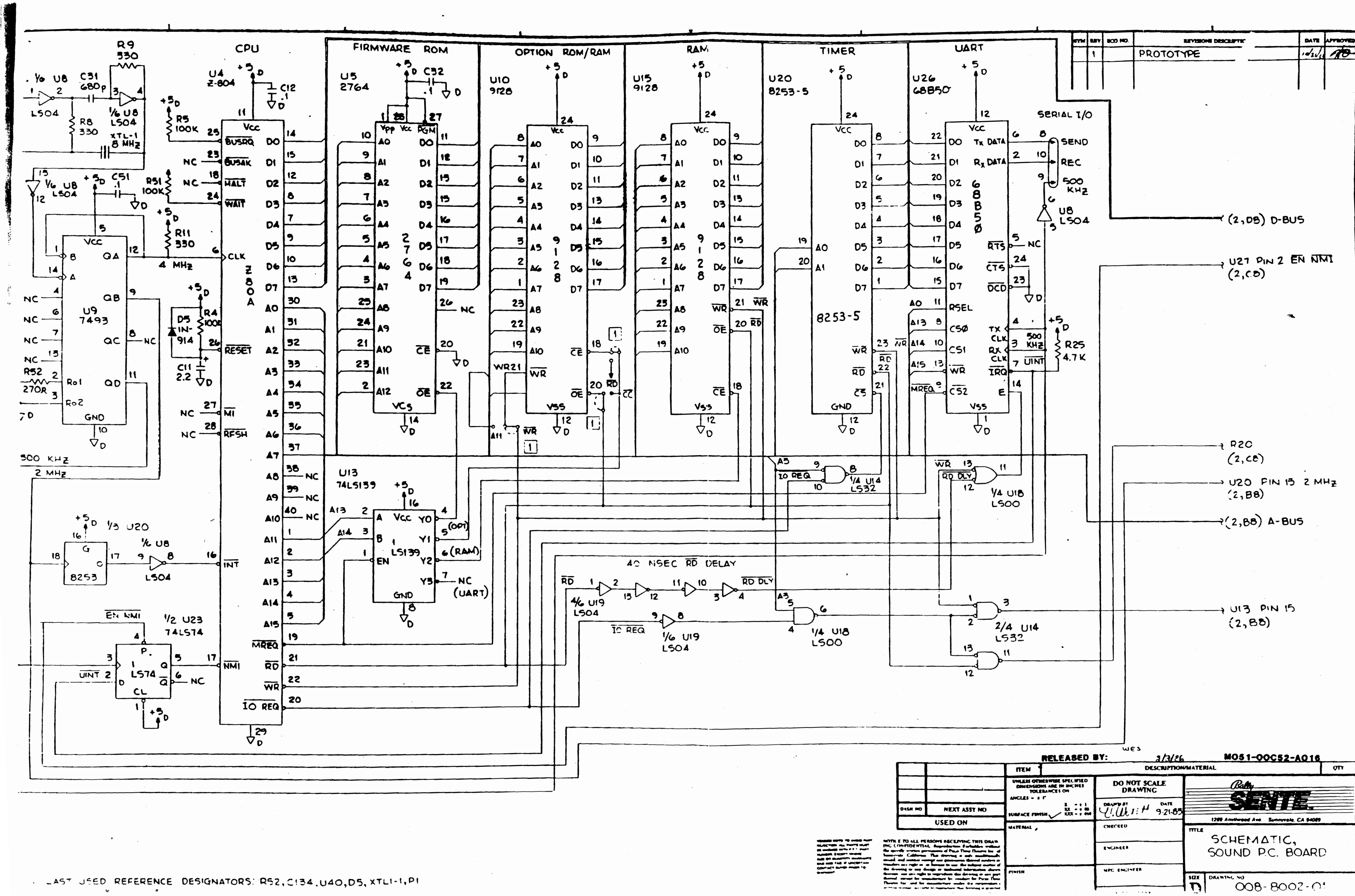
ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	2	400-1001-01	R1,R44	RES,CF,1/4W,5%,1K OHM
2	1	400-6802-01	R3	RES,CF,1/4W,5%,68K OHM
3	5	400-1003-01	R4,5,42,45,51	RES,CF,1/4W,5%,100K OHM
4	12	400-1004-01	R6,7,12,13	RES,CF,1/4W,5%,1.0M OHM
5	3	400-3300-01	R8,9,11	RES,CF,1/4W,5%,330 OHM
6	6	400-2001-01	R15,16,17,20,22,50	RES,CF,1/4W,5%,2.0K OHM
7	3	400-4701-01	R25,41,46	RES,CF,1/4W,5%,4.7K OHM
8	2	400-4702-01	R48,49	RES,CF,1/4W,5%,47K OHM
9	1	400-3307-01	R43	RES,CF,1/4W,5%,33 OHM
10	1	401-1005-01	R47	RES,CC,1/4W,5%,10M OHM
11	6	450-3013-01	R2,10,14,21,26,29	RES,MF,1/8W,1%,301K OHM
12	1	450-1962-01	R40	RES,MF,1/8W,1%,19.6K OHM
13				
14	1	450-2002-01	R30	RES,MF,1/8W,1%,20.0K OHM
15	1	450-4021-01	R31	RES,MF,1/8W,1%,4.02K OHM
16	1	450-1001-01	R32	RES,MF,1/8W,1%,1.00K OHM
17	1	450-1210-01	R35	RES,MF,1/8W,1%,121 OHM
18	1	450-4990-01	R36	RES,MF,1/8W,1%,499 OHM
19	1	450-1002-01	R39	RES,MF,1/8W,1%,10.0K OHM
20				
21	12	330-0005-01	C14,18,34,38,53, 57,71,75,89,93,119, 121	CAP,PES,RAD,0.001UF, 100V,10%
22	6	330-0009-01	C1,15,35 54,72,90	CAP,PST,AXL,0.002UF, 100V,5%
23	48	330-0006-01	C2,5,6,7,9,16,23,25, 26,27,28,29,30,36,43, 45,46,47,48,49,50,55, 62,64,65,66,67,68,69, 73,80,82,83,84,85,86, 87,91,98,100,101,102, 103,104,105,126,129, 130	CAP,PES,RAD,0.01UF,100V, 10%
24	20	330-0007-01	C20,21,22,40,41,42, 59,60,61,77,78,79,95, 96,97,113,114,123, 124,125	CAP,PES,RAD,0.033UF,100V 10%
25	3	300-0011-01	C112,116,134	CAP,CER,RAD,33PF,50V,10%
26	7	300-0012-01	C19,31,39,58,76,94, 122	CAP,CER,RAD,680PF,50V,5%
27	25	300-0002-01	C3,4,10,12,17,24,32, 37,44,51,56,63,74,81, 92,99,106,107,109, 110,111,115,117,128, 133	CAP,CER,RAD,0.1UF,50V,20%
28	3	310-0012-01	C127,131,132	CAP,TAN,RAD,1.0UF,25V,20%
29	3	340-0016-01	C8,11,108	CAP,ELC,AXL,2.2UF,63V,50/ 10%

PCB ASSEMBLY, AUDIO 6VB
(006-8002-10-0B) (M051-00C52-B015)
PARTS LIST - SHEET 3 of 4

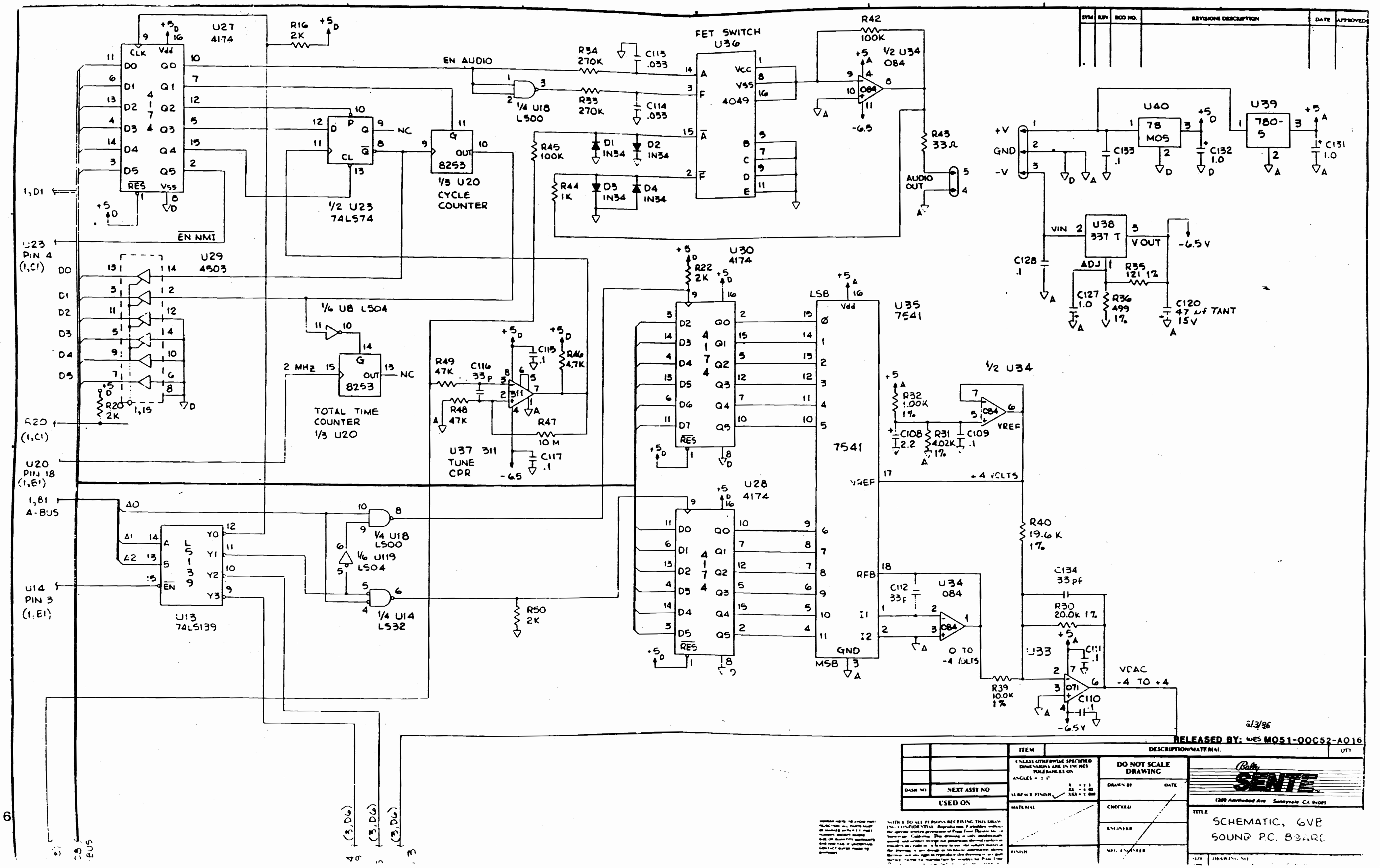
ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
30	6	340-0017-01	C13,33,52,70,88,118	CAP,ELC,AXL,10UF,35V,50/ 10%
31	6	260-0033-01	U1,6,11,16,21,31	IC,SP,SOUND,SYNTH,CEM, 3394
32	5	210-0007-01	U24,25,27,28,30	IC,DIG,CMOS,4174B,HEX D F/F
33	6	210-0006-01	U3,7,12,17,22,32	IC,DIG,CMOS,4051B,8 CHAN MUX
34	1	210-0005-01	U36	IC,DIG,CMOS,4049UB,HEX INVERT
35	1	260-0029-01	U34	IC,LIN,OPAMP,TL084,QUAD, JFET
36	1	260-0031-01	U35	IC,SP,DAC 12 BIT, 7541
37	1	260-0007-01	U37	IC,LIN,COMP,LM311N
38	1	260-0037-01	U33	IC,LIN,OPAMP,TL071,JFET, INPUT
39	1	210-0008-01	U29	IC,DIG,CMOS,4503B,HEX TS BUFFER
40	1	260-0040-01	U2	IC,SP,NOISE SOURCE MM5837
41	1	200-0039-01	U18	IC,DIG,TTL,74LS00,NAND GATE
42	2	200-0041-01	U8,19	IC,DIG,TTL,74LS04,HEX INVERTER
43	1	200-0043-01	U14	IC,DIG,TTL,74LS32,OR GATE
44	1	200-0044-01	U23	IC,DIG,TTL,74LS74,DUAL D F/F
45	1	200-0074-01	U9	IC,DIG,TTL,7493,4 BIT COUNT
46	1	200-0049-01	U13	IC,DIG,TTL,74LS139,2-4 DECODER
47	1	250-0007-01	U4	IC,DIG,MPU,Z-80A
48				
49	2	240-0005-01	U10,15	IC,DIG,RAM,6116,2KX8, 200NS
50	1	250-0008-01	U20	IC,DIG,MPS,8253-5,TIMER
51	1	250-0010-01	U26	IC,DIG,MPS,68B50,ACIA .75MHZ
52	1	260-0027-01	U38	IC,LIN,VR,337T,VARIABLE NEG.
53	1	260-0028-01	U40	IC,LIN,VR,78M05CT,5V POS
54	1	260-0008-01	U39	IC,LIN,VR,7805,5V POS
55	4	100-0006-01	D1,2,3,4	DIO,GR,50MA,75PIV,IN34
56	1	550-0062-01	J5	CONN 10 PIN LOCKING 09-74-1101
57	4	510-0019-01	U10,15,20,26	SOCKET,IC,24P,LOW PRO
58	1	510-0020-01	U5	SOCKET,IC,28P,LOW PRO
59	1	510-0021-01	U4	SOCKET,IC,40P,LOW PRO
60	1	100-0002-01	D5	DIO,SI,10MA,75 PIV,IN914

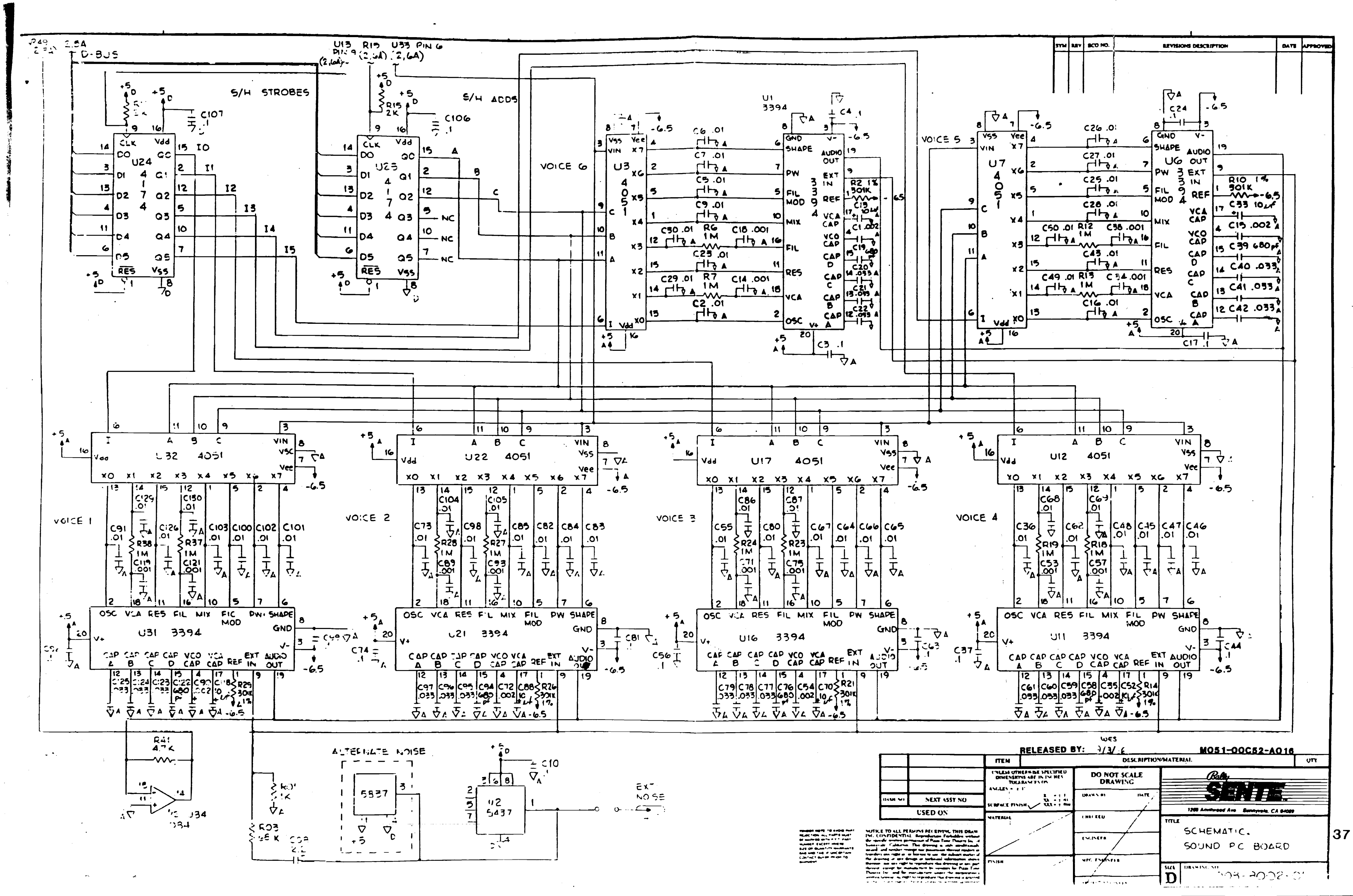
PCB ASSEMBLY, AUDIO 6VB
(006-8002-10-0B) (M051-00C52-B015)
PARTS LIST - SHEET 4 of 4

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
61	1	820-0003-01	XTL-1	CRYSTAL 8.000MHZ
62	1	850-0007-01	HS-1	HEATSINK,THM-6070
63	1	310-0015-01	C120	CAP,TANT,RAD,47UF,15V, 20%
64	2	400-2703-01	R33,34	RES,CF,1/4W,5%,270K OHM
65	1	400-2700-01	R52	RES,CF,1/4W,5%,270 OHM
66	3	801-0632-06-01		SCREW PAN HD-PHIL 6-32X 3/8
67	3	822-0006-00-01		WASHER SPLITLOCK 6
68	3	816-0632-00-01		NUT,HEX,SM PAT,6-32
69	1	007-8002-01-0A		PCB,FAB,AUDIO,6VB
70	1	850-0008-01	HS-2	HEATSINK,THM-6071


CPU
FIRMWARE ROM
OPTION ROM/RAM
RAM
TIMER
UART
U4 Z-80A
U5 2764
U10 9128
U15 9128
U20 8253-5
U26 68B50
U9 7493
U13 74LS139
1/2 U23 74LS74
SERIAL I/O
SEND
REC
500 KHz
(2,D8) D-BUS
U27 PIN 2 EN NMI (2,C8)
R20 (2,C8)
U20 PIN 15 2 MHz (2,B8)
(2,B8) A-BUS
U13 PIN 15 (2,B8)
40 NSEC RD DELAY
XTL-1 8 MHz
4 MHz
500 KHz
2 MHz
PROTOTYPE
RELEASED BY: 3/3/86
M051-00C52-A016
DO NOT SCALE DRAWING
SENTE
1299 Arntwood Ave Sunnyvale, CA 94089
SCHEMATIC, SOUND P.C. BOARD
008-8002-01
LAST USED REFERENCE DESIGNATORS: R52, C134, U40, D5, XTL1-1, P1

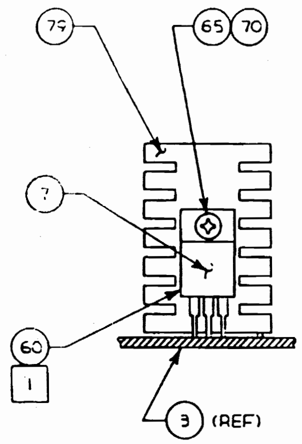
35


U27 4174
R16 2K
EN AUDIO
R34 270K
R33 270K
C115 .033
C114 .033
FET SWITCH U36 4049
R42 100K
1/2 U34 084
1/4 U18 LS00
D1 IN34
D2 IN34
D3 IN34
D4 IN34
R45 100K
R44 1K
R43 33Ω
AUDIO OUT
1/2 U23 74LS74
1/3 U20 CYCLE COUNTER
8253
EN NMI
U29 4503
1/6 U8 LS04
2 MHz
TOTAL TIME COUNTER 1/3 U20
R49 47K
R48 47K
C116 33P
R46 4.7K
R47 10M
C117 .1
U37 311 TUNE CPR
U40 78M05
U39 780-5
C133 .1
C132 1.0
C131 1.0
U38 337T
VIN
VOUT
ADJ
-6.5V
C128 .1
C127 1.0
R35 121 1%
R36 499 1%
C120 47 uf TANT 15V
U30 4174
R22 2K
U35 7541
LSB
MSB
VREF
RFB
GND
1/2 U34
R32 1.00K 1%
C108 2.2
R31 402K 1%
C109 .1
+4 VOLTS
R40 19.6K 1%
C134 33pF
R30 20.0K 1%
U34 084
C112 33P
0 TO -4 VOLTS
U33
C111 .1
C110
R39 10.0K 1%
VDAC -4 TO +4
U28 4174
A-BUS
U13 74LS139
1/4 U18 LS00
1/6 U119 LS04
1/4 U14 LS32
R50 2K
R20 2K
U23 PIN 4
U20 PIN 18
U14 PIN 3
2/3/86
RELEASED BY: WES M051-00C52-A016
DO NOT SCALE DRAWING
NEXT ASSY NO
USED ON
Bally SENTE
SCHEMATIC, 6VB SOUND P.C. BOARD

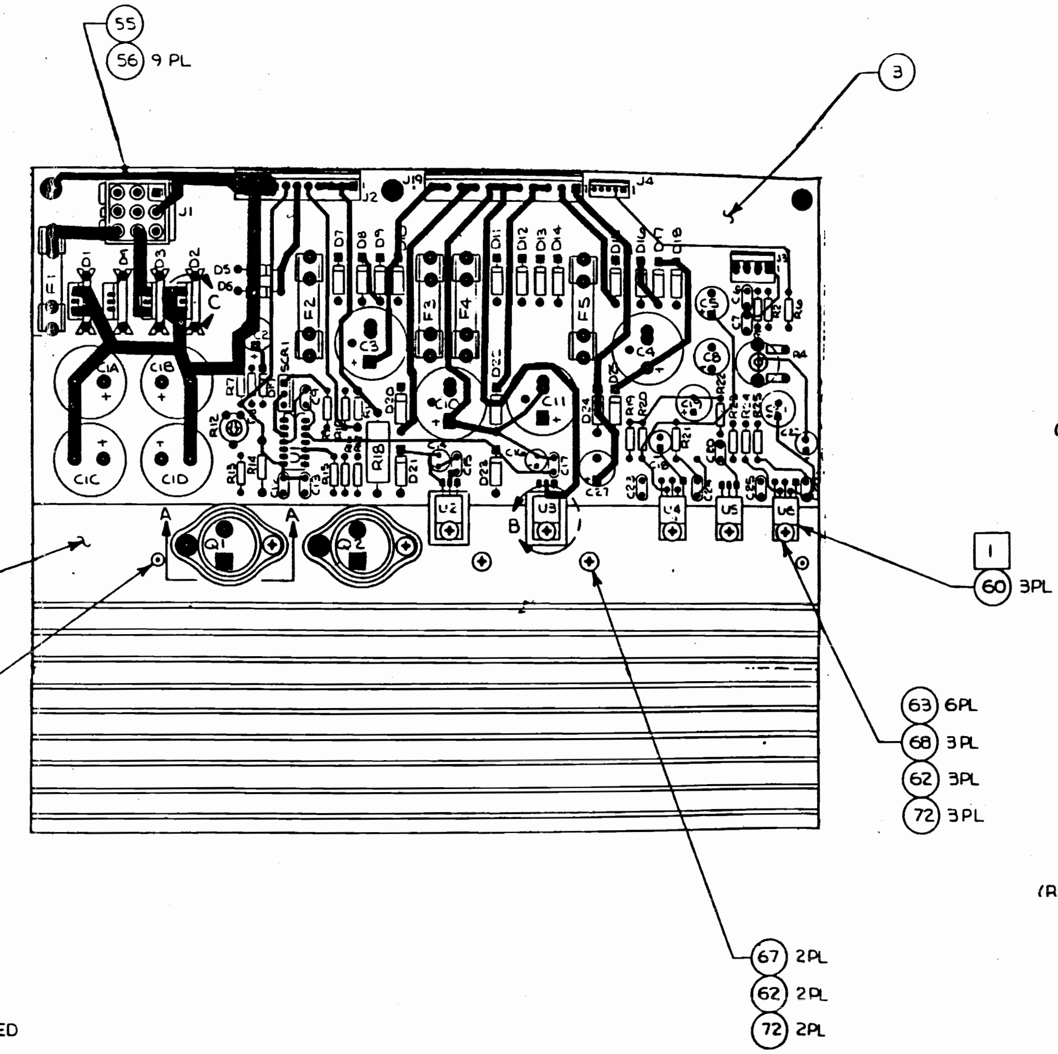

D-BUS
S/H STROBES
S/H ADDS
U24 4174
U25 4174
VOICE 1
VOICE 2
VOICE 3
VOICE 4
VOICE 5
VOICE 6
U3 4051
U1 3394
U7 4051
U6 3394
U32 4051
U22 4051
U17 4051
U12 4051
U31 3394
U21 3394
U16 3394
U11 3394
ALTERNATE NOISE
5837
U2 5437
EXT NOISE
REVISIONS DESCRIPTION
DATE
APPROVED
RELEASED BY:
M051-00C52-A016
ITEM
DESCRIPTION/MATERIAL
QTY
DO NOT SCALE DRAWING
NEXT ASSY NO
USED ON
Bally SENTE
SCHEMATIC,
SOUND PC BOARD
D

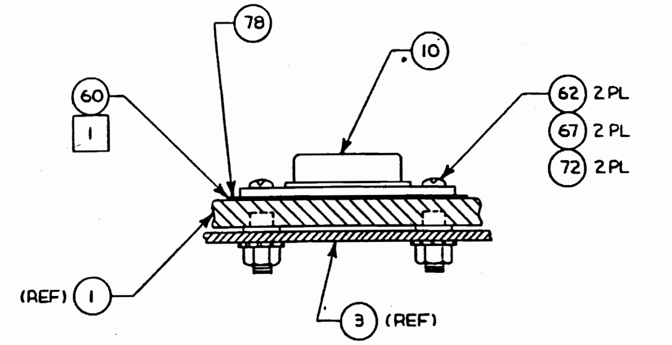
37

SYM	REV	ECO NO.	REVISIONS DESCRIPTION	DATE	APPROVED
	B	1998	RELEASED REDESIGNED PCB		

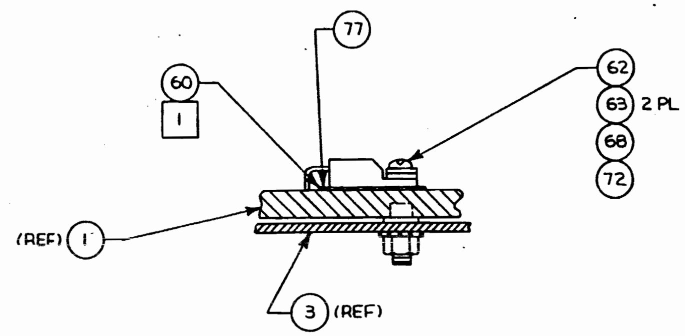


DETAIL C
TYPICAL 4PL (D1-D4)
SCALE: 2/1





VIEW A-A
TYPICAL 2PL (Q1,Q2)
SCALE: 2/1



DETAIL B
TYPICAL 2PL (U2,U3)
SCALE: 2/1

NOTES: UNLESS OTHERWISE SPECIFIED

1. APPLY HEATSINK COMPOUND (ITEM 60) ON BOTH SIDES OF INSULATOR (ITEM 78) AT Q1 AND Q2, AND ON BOTH SIDES OF INSULATOR (ITEM 77) AT U2 AND U3. APPLY BETWEEN HEATSINK AND COMPONENT AT U4, U5, U6, D1, D2, D3 AND D4.

RELEASED BY: WES 8/13/86 M051-00C52-8017

		ITEM	DESCRIPTION/MATERIAL	QTY
10	000-8011-10			
DASH NO	NEXT ASSY NO.			
USED ON				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = ± 1°
SURFACE FINISH ✓

DO NOT SCALE DRAWING
DRAWN BY: L.PERCIVAL DATE: 9/13/84
CHECKED: L. FORTE 9/19/84
ENGINEER
MFG ENGINEER

MATERIAL: SEE L/M
FINISH

Bally SENTE
1200 Arastradero Ave Sunnyvale, CA 94086

TITLE: PCB ASSY, LINEAR POWER SUPPLY

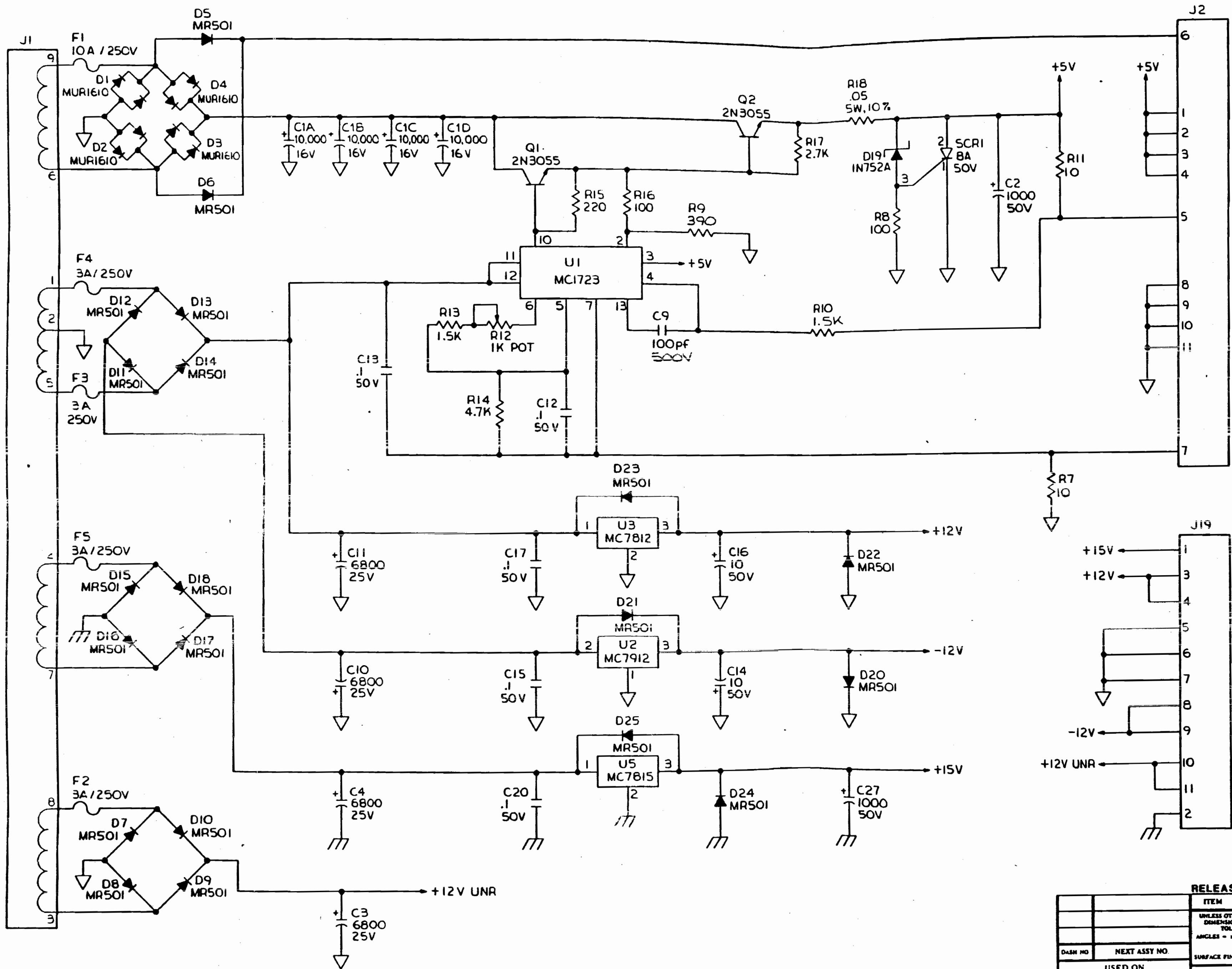
SIZE: D DRAWING NO: 006-8008-10 REV

PCB ASSEMBLY, LINEAR POWER SUPPLY
(006-8009-10-0B) (M051-00C52-B017)
PARTS LIST - SHEET 2 of 3

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	001-8076-01-0B		HEATSINK,E-368/#5555
2				
3	1	007-8009-10-0B		PCB FAB, LINEAR PWR SPLY
4				
5	20	100-0008-01	D5-D18,D20-D25	D10,SI,3A,100 PIV,MR501
6				
7	4	105-0004-01	D1-D4	D10,RECTIFIER,16A, MUR1610 CT
8	1	110-0004-01	D19	D10,ZEN,5.6V,20MA,IN752A
9				
10	2	120-0004-01	Q1,Q2	XSTR,SI,NPN,2N3055
11				
12	1	160-0004-01	SCR1	SCR,8A,50V,C122F1
13				
14	2	260-0039-01	U4,U6	IC,LIN,SP,TDA2002,AUD AMP
15	1	260-0042-01	U2	IC,LIN,VR,MC7912,-12V, 3 POS
16	1	260-0043-01	U3	IC,LIN,VR,MC7812,+12V, 3 POS
17	1	260-0044-01	U5	IC,LIN,VR,MC7815,+15V, 3 POS
18	1	260-0045-01	U1	IC,LIN,VR,MC1723,SI,MONO
19				
20	9	300-0002-01	C6,C7,C12,C13,C15,C17, C20,C23,C25	CAP,CER,RAD,.1MF,50V
21	2	300-0001-01	C24,C26	CAP,CER,RAD,.022UF,50V, 20%
22	1	320-0007-01	C9	CAP,MIC,RAD,100PF,500V, 5%
23				
24	4	340-0026-01	C14,C16,C18,C22	CAP,ELC,RAD,10MF,50V,20%
25	2	340-0027-01	C19,C21	CAP,ELC,RAD,470MF,16V, -10%,+50%
26	4	340-0028-01	C1A,C1B,C1C,C1D	CAP,ELC,RAD,10.000MF,16V +10%,-30%
27	4	340-0029-01	C3,C4,C10,C11	CAP,ELC,RAD,6800MF,25V, -10%,+30%
28	4	340-0030-01	C2,C5,C8,C27	CAP,ELC,RAD,1000MF,50V, 20%
29				
30	2	400-1000-01	R8,R16	RES,CF,1/4W,5%,100 OHM
31	2	400-1008-01	R1,R2	RES,CF,1/4W,5%,1 OHM
32				
33	2	400-1007-01	R7,R11	RES,CF,1/4W,5%,10 OHM
34				
35	1	400-1501-01	R13,R10	RES,CF,1/4W,5%,1.5K OHM
36				
37	1	400-2200-01	R15	RES,CF,1/4W,5%,220 OHM

PCB ASSEMBLY, LINEAR POWER SUPPLY
(006-8009-10-0B) (M051-00C52-B017)
PARTS LIST - SHEET 3 of 3

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
38	2	400-2208-01	R19,R23	RES,CF,1/4W,5%,2.2 OHM
39				
40	1	400-2701-01	R17	RES,CF,1/4W,5%,2.7K OHM
41	1	400-3900-01	R9	RES,CF,1/4W,5%,390 OHM
42	1	400-4701-01	R14	RES,CF,1/4W,5%,4.7K OHM
43	2	400-4707-01	R21,R25	RES,CF,1/4W,5%,47 OHM
44	1	480-0007-01	R12	RES,VAR,STR,TRIM,1K OHM
45	1	480-0008-01	R4	RES,VAR,STR,TRIM,100 OHM
46	3	410-2200-01	R20,22,24	RES,CF,1/2W,5%,220 OHM
47	1	440-0508-01	R18	RES,WW,5W,10%,.05 OHM
48	1			
49				
50	1	550-0067-01	J3	CONN,PC,4P,M,09-74-1041
51	1	550-0068-01	J4	CONN,PC,5P,M,22-23-2051
52				
53	1	550-0102-01	J2	CONN,PC,11P,M,09-74-1111
54	1	550-0103-01	J19	CONN,PC,11P,M,10-19-1111
55	1	550-0110-01	J1	CONN,PC,9P,PLG,19-09-2099
56	9	550-0111-01	J1	CONN,PIN,M,PC,02-09-8113
57				
58	10	580-0070-01	F1-F5	FUSE,CLIP,PC,1/4"
59				
60	A/R	790-0007-01		THERMAL JOINT COMPOUND
61				
62	13	800-0240-01		BUSHING,INSULATED,NYLON
63	10	800-0241-01	U2-U6	WSHR,RECTANGULAR,METAL,#6
64				
65	4	801-0440-04-01	D1-D4	SCREW, PH,PH,4-40 X 1/4"
66				
67	6	801-0632-08-01	Q1,Q2	SCREW,PH,PH,6-32 X 1/2"
68	5	801-0632-10-01	U2-U6	SCREW,PH,PH,6-32 X 5/8"
69				
70	4	812-0440-00-01	D1-D4	NUT,HEX,4-40
71				
72	11	813-0632-00-01		NUT,HEX,KEP,6-32
73				
74	4	830-0019-01	F2-F5	FUSE,3AG,3A,250V,FAST ACTING
75	1	830-0020-01	F1	FUSE,3AB,10A,250V,SLO-BLO
76				
77	2	850-0009-01	U2,U3	INSULATOR,MICA,TO-220
78	2	850-0010-01	Q1,Q2	INSULATOR,MICA,TO-3
79	4	850-0011-01	D1-D4	HEATSINK,PC MOUNT,VERT, TO-220
80	1	400-1201-01	R6*(REV B1)	RES,CF,1/4W,5%,1.2K OHM



A	1984	PRODUCTION RELEASE	
B	1998	RELEASED REDESIGNED PCB	
B1	2061	changed R6	

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%.
2. ALL CAPACITORS ARE IN MICROFARADS.
3. LAST REFERENCE DESIGNATORS USED: R25, C27, D25, U6, Q2, F5, J19, SCR1.
4. HEAT SINK ATTACHED TO AUDIO GROUND.
5. = AUDIO GND

   = GND

RELEASED BY: WES 2/3/86 M051-00C52-B018

ITEM	DESCRIPTION/MATERIAL	QTY

DASH NO | NEXT ASSY NO | USED ON

DO NOT SCALE DRAWING

DRAWN BY L. PERCIVAL DATE 2/22/84

CHECKED L. FORTE 2/29/84

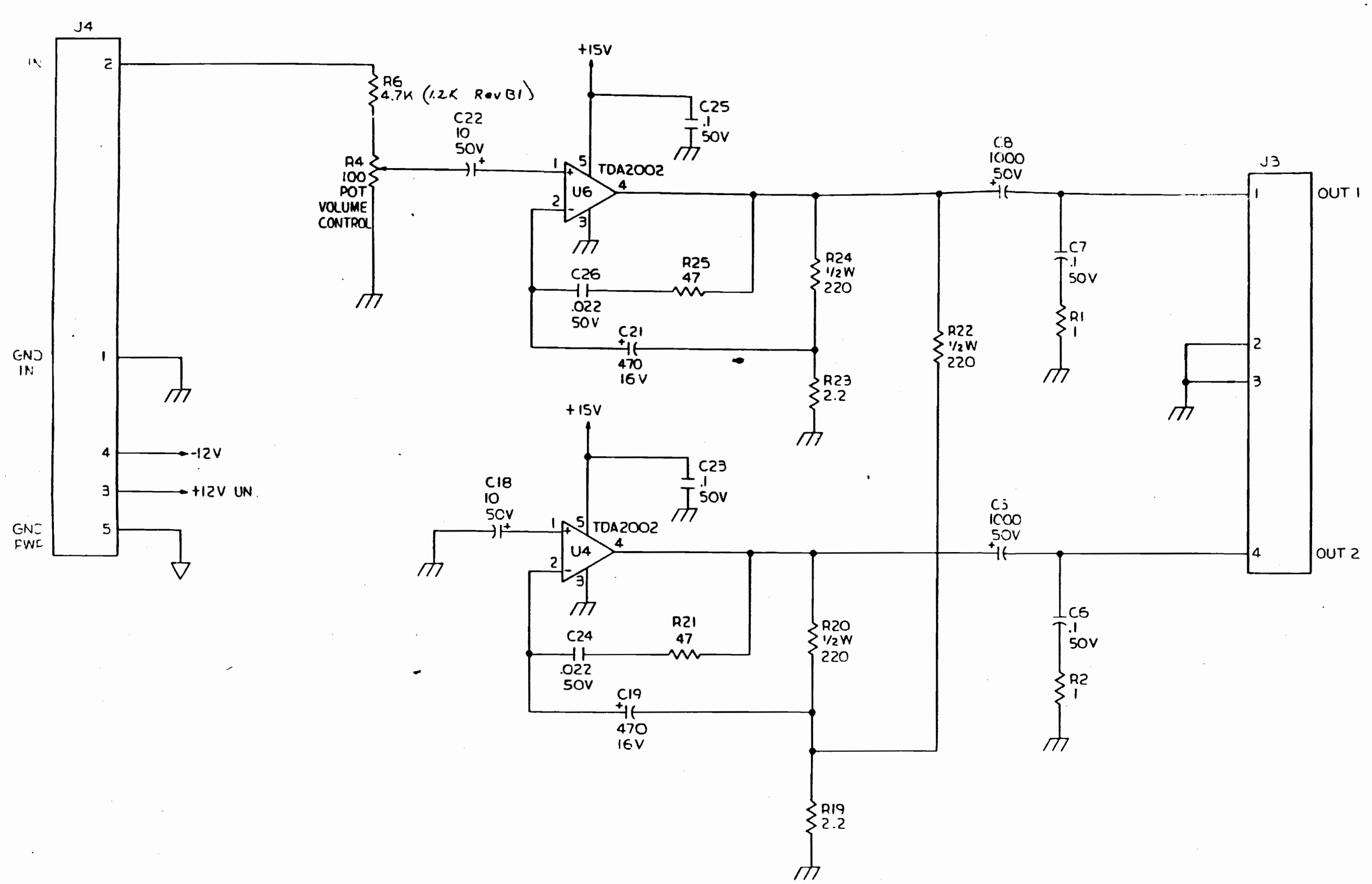
Bally SENTE

TITLE SCHEMATIC, LINEAR POWER SUPPLY

SIZE D DRAWING NO 008-8009-10-0B REV B

SCALE NONE SHEET 1 OF 2

SYM	REV	ECO NO	REVISIONS DESCRIPTION	DATE	APPROVED



RELEASED BY: WE 2/1/86 M051-00C52-8018

ITEM	DESCRIPTION/MATERIAL	QTY

DASH NO	NEXT ASSY NO
USED ON	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES = ± 1°
X = ± .1, XX = ± .01, XXX = ± .010
SURFACE FINISH ✓
MATERIAL
FINISH

DO NOT SCALE DRAWING
DRAWN BY: L. PERCIVAL DATE: 2/3/84
CHECKED
ENGINEER
MFG. ENGINEER

Bally SENTE
1289 Anvilwood Ave Sunnyvale, CA 94089

TITLE: SCHEMATIC, LINEAR POWER SUPPLY

SIZE: D DRAWING NO: 008-8009-10-0B REV: B

41

RESCUE RAIDER U.R.

OPTION SWITCH SETTINGS

SWITCH NO. 1 (SW1) - AT E1 - LOCATED ON SMUDGE CPU BOARD

/////////////////////////////////// VARIOUS GAME PLAY OPTIONS ///////////////////////////////////

DURING GAME PLAY:	SW#1	SW#2	SW#3	SW#4	SW#5 NOT USED	SW#6 NOT USED	SW#7	SW#8
* 4 LIVES ON EACH COIN	ON	ON						
5 LIVES ON EACH COIN	OFF	ON						
6 LIVES ON EACH COIN	ON	OFF						
3 LIVES ON EACH COIN	OFF	OFF						
* MINIMUM GAME TIME: 90 SECONDS			ON	ON				
MINIMUM GAME TIME: 60 SECONDS			OFF	ON				
MINIMUM GAME TIME: 45 SECONDS			ON	OFF				
MINIMUM GAME TIME:120 SECONDS			OFF	OFF				
* KEEP HIGH SCORES ON POWER UP							ON	
RESET HIGH SCORES ON POWER UP							OFF	
* MUSIC IN ATTRACT								ON
NO MUSIC IN ATTRACT								OFF

*** INDICATED FACTORY RECOMMENDED SETTINGS** | **PART NO. M051-00J18-A007**

RESCUE RAIDER U.R.

OPTION SWITCH SETTINGS

SWITCH NO. 2 (SW2) - AT E2 - LOCATED ON SMUDGE CPU BOARD

////////////////////////////////////// COINS PER CREDIT //////////////////////////////////////

	VARIOUS CREDIT OPTIONS	SW#1	SW#2	SW#3	SW#4	SW#5	SW#6	SW#7	SW#8
	FREE PLAY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
*	1 COIN / 1 CREDIT	ON	ON						
	1 COIN / 2 CREDITS	OFF	ON						
	2 COINS / 1 CREDIT	ON	OFF						
	3 COINS / 1 CREDIT	OFF	OFF						
	//////// COINS ADD BONUS COINS ////////								
*	NO BONUS COINS			ON	ON	ON			
	2 COINS ADDS 1 BONUS COIN			OFF	ON	ON			
	3 COINS ADDS 1 BONUS COIN			ON	OFF	ON			
	4 COINS ADDS 1 BONUS COIN			OFF	OFF	ON			
	4 COINS ADDS 2 BONUS COINS			ON	ON	OFF			
	5 COINS ADDS 1 BONUS COIN			OFF	ON	OFF			
	5 COINS ADDS 2 BONUS COINS			ON	OFF	OFF			
	5 COINS ADDS 3 BONUS COINS			OFF	OFF	OFF			
	//////// COIN MECH MULTIPLIER ////////								
*	LEFT COIN MECH X 1						ON		
	LEFT COIN MECH X 2						OFF		
*	RIGHT COIN MECH X 1							ON	ON
	RIGHT COIN MECH X 4							OFF	ON
	RIGHT COIN MECH X 5							ON	OFF
	RIGHT COIN MECH X 6							OFF	OFF

*** INDICATED FACTORY RECOMMENDED SETTINGS** **PART NO. M051-00J18-A007**